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ABSTRACT

This bulletin is published annually in the interest of children with specific language disabilities, learning disabilities or dyslexia. Articles in this issue deal with "Some Problems of the Ex-Dyslexic," "Hemispheric Specialization and Stages in the Learning-to-Read Process," "The International Scene," "Diagnosis and Treatment," "Semantics--Diagnostic Categories: Their Use and Misuse," "Personal and Social Studies," and "Books and Children--An Open Letter from a Mother to Her Married Children." Information about the Orton Society is presented. (MKM)

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THE ORTON SOCIETY, INC.

BULLETIN
OF THE
ORTON SOCIETY

A Non-profit Scientific and
Educational Organization for the Study
and Treatment of Children
with Specific Language Disability
(Dyslexia)

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BULLETIN OF THE ORTON SOCIETY

VOLUME XXIII, 1973

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FOREWORD

As in previous years, this 23rd annual *Bulletin* contains papers from the laboratory and from the research and treatment clinic, as well as reports from school and individual educational settings. The editor is responsible for reviews, unless they are otherwise initialed.

As always, the views represented throughout are those of the several writers, for the Orton Society as a body holds neither an "official" view nor judgmental responsibility. This is discussed in more detail in the Society's Policy Statement, reprinted at the end of this issue. Responsibility for inclusion of all materials in the *Bulletin* rests with the Editor, to whom they seemed relevant to the Society's stated purpose, "The study, treatment, and prevention of problems of Specific Language Disability."

An Index to Volumes I through XXI of this *Bulletin* is now available. See list of publications.

Comments and criticism from readers will be welcome at any time. Papers and other contributions to be considered for publication in Volume XXIV should be submitted, in duplicate, as long as possible before May 1, 1974. Manuscripts, including bibliographies, if any, should be typewritten and completely double-spaced. Format should follow that of similar articles in this issue of the *Bulletin*. We very much appreciate the cooperative work of authors, readers, and staff that enables us to produce your annual journal.

Mrs. Margaret B. Rawson, Editor
Route 10
Frederick, Maryland 21701

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The 1972 Samuel T. Orton Award

Presented by the Orton Society to

Beth H. Slingerland

PRESENTATION BY JAMES L. TUCKER, M.D.

As a member of this Conference Committee, we welcome you all to Puget Sound and the Northwest, to this Conference and, in particular, to this occasion for the presentation of the Sixth Annual Samuel T. Orton Award.

Beth Slingerland—that name rings well on the ear—four beautiful syllables—behind the name Beth H. Slingerland where is a story of pioneer grit, stick-to-it-iveness, and enthusiasm, the force of which I shall try to relate.

She was born in Santa Rosa, California, her grandparents having come to northern California in the 1850's. She received her degree in education from San Francisco State College.

After teaching a few years in California, she met John Slingerland whom she married in 1925 in Honolulu. For over ten years she taught at the Punahou School in Hawaii. During those early years of teaching she noted that there were bright children who had trouble with language. Hearing that efforts were being made to help these children, especially in the East, she got in touch with Anna Gillingham and Bessie Stillman and arranged to meet them at Glacier National Park for a month in the summer of 1935. What was supposed to be a vacation for these pioneers turned out to be a vacation just for John, who fished in the mornings, while the women spent the mornings in study. The afternoons were informal, and John joined them [illegible] hiking over the trails of the Rockies.

Following this contact, Bessie Stillman and Anna Gillingham spent two years at the Punahou School, where Mrs. Slingerland continued to work under their direction.

After World War II, John and Beth Slingerland returned to the mainland, happily for us, to Renton, Washington. Mr. Oliver Hazen, then Superintendent of the Renton School District, recalled how in those early years his new second-grade teacher would come to his office, full of enthusiasm, requesting a chance to teach "more of these children." He learned at once that, "You don't say no to Beth Slingerland." Through Mr. Hazen's encouragement, and with the interest of a few teachers at Sartori School, she started two things that have continued to the present. First, she was interested in helping dyslexic children in the classroom, in general education. Secondly, she understood the need for the classroom teacher to become able and skilled at helping these children, and to this end she became devoted to the training of teachers.

The rest of the story of Beth Slingerland is probably more familiar to us all, being an extension of those two basic interests—helping children, and helping teachers who could help these children. During the 1950's, she worked out adaptations of what she had learned from Anna Gillingham and Bessie Stillman that could be used in the classroom. Her drive and enthusiasm for teacher training resulted in the Renton Summer School Program, under the auspices of Seattle Pacific College, beginning in 1960.

Early recognition and identification of these children then became of great importance, in order to prevent development of full-blown language disability. With classroom teachers ready, then, the next step was the screening of the primary school children so that those who might well become language disabled would be selected for specialized classrooms. Out of this

need came her widely used publications, her Screening Tests for the Identification of Children with Specific Language Disability.

Interest in this type of approach spread rapidly throughout the country and created a demand for her organization and organizational and consultative abilities, despite her alleged retirement in 1965. She was appointed a consultant to the Highland Park School in Dallas, to the Richardson School, Richardson, Texas, and to the Texas Scottish Rite Hospital in Dallas, in 1963. In 1965, she established a summer school for teacher training and was appointed consultant to the public schools of Menlo Park, California. She was made an honorary member of the board of the Charles Armstrong School in Menlo Park, where one of her first teachers from Renton became director. Similarly, in Kalispell, Montana, and recently in Medford, Oregon, she helped establish schools for training teachers—always preparing others to become the directors—until now there are nine of them, with more to come. Also, while in retirement, and between her travels to these out-of-state interests, she has published her long-awaited book, *"A Multisensory Approach to Language Arts for Specific Language Disability Children."*

We all know and have felt opposition in our attempts to help children. I have heard Dr. Lucius Waites talk descriptively of how he "rassled" the opposition to the floor. How many times have we heard Beth Slingerland explain, "I don't care a hoot what they say, we have to help these children now. Let those who are interested in collecting statistics go ahead and collect their statistics. Meanwhile, we shall proceed to teach these children with the method that we know helps."

It sometimes takes a woman like Beth Slingerland, who doesn't care a hoot, to get things done. She knew she was on the right track, and, being true to her pioneer stock, she couldn't be discouraged. She knew what she was doing for children. We, here, know what she has done for children. And now is the time for the national Orton Society to honor Beth Slingerland with the Samuel T. Orton Award for 1972. She joins the distinguished past recipients, Lauretta Bender, Edwin Cole, Katrina de Hirsch, June Orton, Lloyd Thompson, and Margaret Rawson. The citation reads:

> For her concern with the unmet needs of children with specific language disability; for her steadfast belief in the training of teachers to meet those needs in the classroom; and for her timely publications, useful in the identification and teaching of children with specific language disability, the Samuel T. Orton Award for 1972 is presented to Beth H. Slingerland.

Response by Beth H. Slingerland

How can one express gratitude for an honor bestowed by an organization such as the Orton Society? It overwhelms me. All too conscious am I of those six people who have preceded me as recipients of the Samuel T. Orton Award—Lauretta Bender, Edwin Cole, Katrina de Hirsch, June Orton, Lloyd Thompson, and Margaret Rawson—and of others more worthy than I, yet to come. Feeling respect and admiration for them, and gratitude for the enrichment of background they have provided for better understanding of specific language disability children and, in recognizing what their contributions mean to many of us, I have been plagued with the recurring thought of why I was to be here tonight. Could there have been a mistake? The answer I had to find came as a strong and clear reminder that I did not get here by myself and that many others are sharing with me right now—teachers, school administrators, leaders in various fields, parents, doctors, well wishers, and my own husband, John. While this award may be the seventh in numerical order, undoubtedly it must rank first as a Composite Award, for which I stand here merely as a symbol of its bestowal on the combined contributions of all of us who have been serving specific language disability children in our own special ways.

Impossible it is to name all those who share with me. First would be Anna Gillingham and Bessie Stillman. They gave to me more than a professional relationship but, in addition, one of treasured friendship filled with memories that lasted until the end of the life of each one. From them I learned a remediation for young people who were already failing, an experience that redirected the course of my life into paths for early remediation of very young SLD children and then toward an even earlier need which is that of prevention itself.

Subsequent events brought me into the Pacific Northwest and into a public school situation. Thanks to Oliver Hazen, a superintendent with courage to stand back of the untried, and to my first co-workers, Jean Raab, Barbara Herman, and Marty Aho, a program in early identification, to be immediately implemented with multisensory techniques adapted for classroom use from the Orton-Gillingham approach, was enabled to take root and to spread. As a result of those initial steps, other school administrators and dedicated teachers are equally deserving of individual mention that cannot be given at this time.

Both Sally Childs, as President of the Orton Society, and among the first

Mr. and Mrs. Slingerland at the 1972 Annual Conference of the Orton Society when Mrs. Slingerland received the Samuel T. Orton Award.

to see value in screening for early identification, and Robert Hall, as publisher, gave the unexpected impetus to foster very early recognition and treatment for specific language disability children.

Another share must go to our supporters in the colleges of five different states that have accredited our nine summer schools for the introduction of specific language disability teacher training.

I wish that Dr. Orton could see the clear-eyed eager young people whose lives are full of hope and confidence in their abilities to achieve and to find their places in society as a consequence of instruction built on the basic principles underlying their neurophysiological disabilities and devised for their ways of learning, as presented by him so long ago. These children and young people are the living memorials to him whose contributions stimulated an awakening that is recognizing their potentialities and their right to consideration by all the disciplines responsible for child development.

From the time I became one of the first members of the national Orton

Society in 1950 and for several years thereafter, and the only member in the Pacific Northwest until Jane McClelland arrived to double the membership, the national organization has stood as the unifying focal point from which not only the learnings of others have been gathered and disseminated, but as the gentle prodder to keep alive faith and purpose and courage to circumvent obstacles in a frequently hostile world unfamiliar with specific language disability, or dyslexia. Each president of the Orton Society—June Orton, Sally Childs, Margaret Rawson, and Roger Saunders—has given the nod to "go ahead; keep at it," at the moments when it has been most needed.

The Puget Sound Branch of the Orton Society is the first branch to have been established in this nation. It did not "just happen." Again, a combination of mutual efforts, including that of its first president, Paul Williams, ably assisted by his wife Pat, was responsible. As I have observed the labors of all who have been involved in this conference in Seattle, I realize how minimal is my share.

As I accept this award I shall be spared the frightening feeling of personal inadequacy and unworthiness if my particular single place within the totality of its true meaning is fully understood.

I am deeply and sincerely honored to receive the 1972 Samuel T. Orton Award and I hope I may continue, as best I can, to be a useful and contributing member of the Orton Society.

Some Problems of the Ex-Dyslexic

Macdonald Critchley

This paper was presented at the 23rd Annual Conference of the Orton Society, Seattle, Washington, 1972. Dr. Critchley was introduced by Dr. Masland at the Conference.

Introduction
by Richard L. Masland, M.D.

There are few physicians whose interest in dyslexia dates back as far as does that of this evening's speaker. Dr. Critchley tells me that his discovery of the problem took place in 1925, when as an intern he became interested in studying a child with mirror writing. His medical associates suspected him of having "trained the child backward"!

His studies led to the first of his impressive series of books on this and related studies of the higher nervous functions: *Mirror Writing* (1927); *The Parietal Lobe* (1953); *Developmental Dyslexia* (1964); *Aphasiology* (1970); and *The Dyslexic Child* (1970).

He is an experienced physician, with more than 1300 case studies of dyslexics. His years of study have given him an almost unique opportunity to consider the long-term view of dyslexia, as a problem and as it affects the individual who has it.

Dr. Critchley is Honarary Consultant to the National Hospital for Neurological Diseases and to King's College Hospital, London; Honorary Fellow of the Royal College of Physicians; President of the World Federation of Neurology since 1965; and Chairman of the WFN's Research Committee on Dyslexia and World illiteracy.

Having been interested for so many years in the problem of reading retardation, indeed since 1925, I have naturally witnessed considerable changes in the attitude of educators, teachers, doctors, parents, psychiatrists, and psychologists towards this problem of learning disorders. One is grateful to bodies like our Orton Socity who have over the years done so much in the way of pioneering or crusading work; for today, as a result, we can see spe-

cific reading retardation, or specific developmental dyslexia as I prefer to call it, widely accepted as a respectable entity.

We know nowadays that given a combination of five or six favorable circumstances it may well be that a youngster with developmental dyslexia can be helped to such an extent that in time he will be fitted to take his place within the community, to enter high school or college, and even a university graduate school. What exactly are these favorable circumstances?

In the first place, correct diagnosis, and this is essential. Secondly, correct diagnosis at the earliest possible moment. Thirdly, I would rate a sympathetic and enlightened attitude on the part not only of teachers but also of the youngster's parents. Fourth, we have the factor of intellectual capacity. Other things being equal, the higher the I.Q. the better the prospect of the dyslexic mastering his disability. Then comes his ability to find access to skilled remedial training at the hands of a teacher who is experienced in the art of coping with dyslexics. Lastly, I would put a rather intangible factor which is none the less extremely important. I refer to the personality of the dyslexic child. If he is enthusiastic and is fired with the ambition to master this at first boring and unpleasant task of learning to read; if he possesses what I believe psychiatrists in your country call ego-strength but which we in Great Britain prefer to term "guts," then his prospects are good, indeed. If all the foregoing favorable factors are present, then the future is rosy for the dyslexic child.

Not only have I had abundant experience with dyslexics making such progress with their education that they have been able to matriculate, gain acceptance to universities, and to obtain their appropriate bachelor's degree, but I have known some dyslexics who have obtained even higher academic distinctions, and achieved masterships and doctorates. In other words, the disability has been overcome as the result of this concatenation of favorable circumstances which I have just mentioned.

Nevertheless, we must avoid complacency. We who work in the field of dyslexia realise that there is still a tremendous amount of work that has to be done. I am not referring at this moment to the subject of propaganda and of educating the political, legislative, and executive establishment. No, I mean that there is still a tremendous scope for scientific research, including medical and linguistic studies, into many of the problems attendant upon developmental dyslexia.

To begin with, we are still ignorant as to the precise prevalence of this disorder throughout the world. That's simply one unknown factor.

I will, if I may, select a single unknown quantity for discussion, and that is the subject of the dyslexic who is growing up—the adolescent, or young adult who in earlier years was bedevilled by his frustrating inability to read. I like to call this "the problem of the ex-dyslexic," for I wish to make the point that, despite his apparent progress and achievement in the field of academic attainment, the adult may well still have his secret problems. Though unobtrusive, they are nonetheless so important and so enduring that we must not brush them under the carpet. To know what these problems are, is to give us the prospect of being able to take appropriate steps either to overcome them, or—and this perhaps is more likely—to anticipate them at an earlier age in the youngster's education. It is, therefore, highly important to be able to recognise these problems, to identify them, to assess them, to quantify them, and then perhaps it might be possible to sum up the case, and to pass the problem over to the skilled educationalist for him to work out the solution which surely should not be beyond the bounds of possibility.

As I mentioned earlier, the school-leaver, the ex-dyslexic, may well continue to face difficulties, and here appropriate neuro-linguistic studies will be important in bringing them to the fore. Such studies are, I can assure you, currently under way, but the problem is not an easy one. It is difficult, laborious and painstaking. I cannot give you any dogmatic statements as to just what these problems are, their nature and their magnitude; but I can state my impressions of what in all probability they will turn out to be.

In the first place, I submit that the ex-dyslexic usually will be perpetually what one might call a somewhat reluctant reader. Exceptions occur and an adult who has had in the past a clear-cut history of reading retardation may protest and proclaim that he is an avid reader; but I am still a little sceptical. Maybe he does not really read as well as he fancies he does. I suspect that he does not read for the sheer pleasure or fun of it like non-dyslexic individuals. He is not bookish; he doesn't browse in libraries like his contemporaries in age and intellectual attainment. Rather does he prefer to talk, and indeed he may talk well, and may be outstanding as a public speaker, even an orator. He is even more likely to attain a very high rank as a practical man, someone who works with his hands, or who indulges in pursuits which are artistic rather than literary. Or he may well shine as an administrator or business executive, and in any of these fields he may achieve very high rank, but not in academic literary work which does not come too easily to him.

This is so, not only because he is a reluctant reader, but for additional reasons. The ex-dyslexic almost always continues to be a slow reader, so that

it will take him an inordinate length of time to wade through a volume or a technical communication which would be skimmed through quite rapidly by a non-dyslexic. He is slow, furthermore, in getting the gist of a document or business statement, or quickly identifying the nub of an argument or a legal brief. Maybe, too, he is a somewhat inaccurate reader, and this may betray itself in his conversation. For example, he may consistently mispronounce certain words which are familiar enough to him from his reading, but which he does not associate with their spoken equivalents. The result is that in his conversation the ex-dyslexic may make rather odd malapropisms when he comes to articulate words which are unusual or relatively infrequent in usage.

Ex-dyslexics often show an exaggeration of what many normal people experience, and that is an inability to glean information from papers or books, preferring to rely on what they hear rather than what they read. It was said that during the First World War the then British Prime Minister, Lloyd George, never could be bothered, as he put it, to study the multitudinous official papers which were put before him from various governmental, military, or diplomatic sources. Rather, he would say to his secretaries or assistants, "Tell me what's in that paper," and he would listen intently and say, "This is the bit that matters, not that." Again, just like Lloyd George, there have been barristers and attorneys of quite high rank and of great distinction who have probably been ex-dyslexics, possibly even without knowing it, and who have found it very difficult to skim rapidly through a brief before going into the law courts. They prefer to say to one of their juniors, "Tell me what this brief is all about," and after listening very patiently, they have said, "Here is the point of the whole case; now I know exactly what line to take when I am in Court." This description applies to the reading habits of many ex-dyslexics, with their comparative dislike of reading, their slowness, and their inaccuracy.

The difficulties of an ex-dyslexic are even greater when he is faced with the task of putting pen to paper in order to express his ideas. He is a most reluctant writer. In the same way he will be a slow writer and, I need scarcely say, an inaccurate speller. His slowness in writing may reflect itself in his handwriting which may be neat enough and legible as long as he proceeds extremely slowly; but if he tries to hurry to keep pace with his thoughts, his penmanship deteriorates so blatantly that much of it is barely legible. His writing problems show themselves in his correspondence, for his letters are always very brief and sadly infrequent. Few ex-dyslexics excel in creative writing. Of course I know that occasionally they reveal evidence of profound

imagination, but they express their creative talents much better in their oral speech than they do on paper. True, I can recall four or five youngsters and young adults who had been dyslexics who wrote occasional poems. One must remember, however, that it is often easier to write verse, especially in a modern idiom, than it is to express oneself in stylistic prose. We always have, of course, the example of Hans Christian Andersen, whose imaginative tales were well written, though his manuscripts revealed atrocious errors in spelling.

This is one way in which linguistic research comes into the picture. It is quite possible for an expert to study the creative writings of an ex-dyslexic and to identify certain peculiarities which bear witness to the writer's earlier difficulties with reading. Here then is a promising research program for the future. If a researcher can determine the precise nature of the shortcomings in the spontaneous writings of an ex-dyslexic, it might be possible for him to pass on the data, as I hinted before, to the appropriate quarters where steps might be taken not only to obviate these handicaps but even to prevent them from ever developing.

The first thing that will strike a linguist is the comparative brevity of the writings of an ex-dyslexic. That is to say, within a given unit of time, say thirty minutes, the ex-dyslexic commits to paper far less materials than a non-dyslexic. The number of words executed in that thirty minutes will be less than one would expect. This peculiarity is spoken of by linguists as a reduction in the number of "tokens." For example, an ex-dyslexic may perhaps commit to paper in half an hour, 500 words, whereas a non-dyslexic might put down say 800 or even 1,000 words in that same length of time. A still more important factor is that it is not only an overall poverty in the number of "tokens" or words committed to paper, but a reduction in the number of *different* words utilized. That is to say, a normal person who in, say, thirty minutes writes a text of 800 words, on analysis might be found to be making use of say 500 different words out of his total of 800. That would be the normal state of affairs. On the other hand, a dyslexic who has written in thirty minutes 500 words, has probably been using and ringing the changes upon only 250 words. The number of *different* words used, whether by an ex-dyslexic or by a normal person, is spoken of as the number of "types," and we can then make an arithmetical ratio between the number of tokens and the number of types. This ratio will differ in the ex-dyslexic as compared with a normal person.

Let us take another point. In the ordinary spontaneous writings of a normal non-dyslexic subject, we expect to find a variety in the length of the

sentences. Some sentences will be short, others long, and others again intermediate in length. The result is a certain variety which is stylistically satisfying. The dyslexic's writing, on the other hand, is more monotonous. He does not employ particularly long sentences nor for that matter particularly short sentences. The average sentence length is intermediate and does not vary from sentence to sentence.

An important factor in writing is word-choice and word-usage. This is to some extent reflected in the employment of unfamiliar and lengthy terms, suggesting the possession of a vocabulary which is at least adequate. One can estimate this factor roughly by counting the number of syllables which make up the words which appear on paper. Tabulation of the number of monosyllabic, disyllabic, and trisyllabic words employed will give some index of the extent of the storehouse of available terms. It will be found that the ex-dyslexic rarely uses words of three or more syllables, confining himself to short mono- and disyllabic terms, whereas the normal writer may indulge in many words of three or more syllables.

Another lexical aspect can be studied, and that concerns the ratio of adjectives to verbs. This, I submit, will differ in the writings of an ex-dyslexic from the writings of a normal person. Its significance is a matter of speculation, and is possibly bound up with the presence or absence of abstract ideas in the text.

Yet another interesting feature of a linguistic character to assess in the writings of a given individual, is the number of pronouns which are being used. The ex-dyslexic will utilise an undue proportion of first person pronouns—I, me, we—which recur in his writings to an inordinate extent. Normal subjects are less personalized in their script and resort to far more abstract attitudes in their narrative. The ex-dyslexic avoids utilizing abstract conceptions and is much more happy when he expresses on paper notions which are absolutely clear-cut, concrete, and identified with personal experience.

Another lexical aspect concerns punctuation. It is possible to make a "punctuation count" of a given piece of composition, and tabulate the number of times the writer makes use of a comma, a full stop, a colon, semicolon, question mark, exclamation point, and so on. Such a formula differs very much in the writings of an ex-dyslexic from the writings of a normal individual. On the whole the former is very sparing of punctuation marks, and may limit himself solely to full stops.

Furthermore, one would scarcely expect to find in the essays of an ex-

dyslexic any foreign terms or expressions such as one might well come across in the prose of someone of comparable educational status and socio-cultural background. This deficit ties up naturally with what we know about the notorious difficulty which dyslexics face throughout their scholastic curriculum in acquiring any foreign language. Incidentally, and in parenthesis, the average dyslexic finds extreme difficulty in sight-reading a musical score, even though he may eventually become quite a brilliant young musician, instrumentalist, even composer or conductor. But throughout his musical career he is handicapped by a slowness or even a professional hiatus in sight-reading.

The foregoing are some at least of the linguistic features which can be painstakingly identified in the spontaneous writings of persons who have been dyslexic at a younger age and having left school are embarked upon careers. Success may be attained, even brilliant success in the world of business; perhaps even the professions—law, medicine, and so on. I have known many such individuals who have done very well in adult life even though they are

Dr. Critchley with Roger E. Saunders, President of the Orton Society, at the 1972 Annual Conference in Seattle.

still victims of a latent aversion from the written word, of a restricted vocabulary, a difficulty in expressing themselves on paper and a slowness in writing. Many business executives learn successfully to circumvent their problems by relying upon personal interviews, board-room expertise, and the cooperation of intelligent staff to whom they will dictate their correspondence.

This describes the linguistic characteristics of most ex-dyslexics as I know them. The topic is anything but exhausted, and this is merely one of the many scientific problems which should interest a research worker in the field of dyslexology—if you will pardon my nomenclature. I will stop now, merely reminding you that, as Oscar Wilde said, there are words which will wait and which one does not understand for a long time. The reason is that they bring answers to questions that have not yet been raised.

Hemispheric Specialization and Stages in the Learning-to-Read Process

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Address to the 23rd Annual Conference of the Orton Society, Seattle, Washington, 1972. Presentation of this paper was supported by a grant from the Netherlands Organization for the Advancement of Pure Research (ZWO).

Two years ago when the Orton Conference was addressed by Dr. Liberman of the University of Connecticut she asked "whether children who cannot read well are weakly lateralized for language" (Liberman 1971, p. 23), a question that calls attention to an old problem. As a matter of fact, the question, though probably less specifically phrased, was asked as early as 50 years ago. Since the pioneering work of Orton, the concept of lateral dominance has fascinated many investigators of the problem of dyslexia. Therefore, I thought it a good idea to discuss some results of recent investigations. But let me start with a few remarks of theoretical interest.

According to Harris (1958), lateral dominance means the preferred use and better performance of one side of the body as compared with the other side. In view of this definition there are two forms of lateral dominance: either the right or the left side of the body dominates. Orton (1930) defended the hypothesis that the learning process profits by the dominance of one side of the body and that it is of little importance which side dominates. "The child who is clearly left-handed will not encounter much more difficulty in learning than the right-handed," he wrote in 1930.

I have two reasons for mentioning Orton's view. In the first place there are, at least in Holland, still parents who pull a sinister face if they have to say that their child is a sinistral.

But the quotation is also of theoretical importance, for to Orton, lateral dominance was an indication of cerebral dominance. The statement that the left-handed child will not encounter much more difficulty in learning than the right-handed child, therefore is a consequence of his theory that academic achievement is often strongly influenced by cerebral dominance. Which hemisphere dominates is not important, as long as one dominates.

However, Orton realized that factors such as hand preference are not

reliable indicators of cerebral dominance. The native pattern is easily disturbed by training-effects. Now, 45 years later, we have tests that indicate hemispheric dominance for certain functions much more accurately than such variables as hand- and eye-preference.

I am referring to dichotic listening tests. In dichotic listening tests different stimuli are presented to both ears simultaneously; an example: the right ear hears "9" and at the same time the left ear hears "4." Other pairs of digits follow. After the presentation, the subject is asked to reproduce as many digits as possible. Usually the number of digits retained through the left ear is subtracted from the number of digits retained through the right ear. A positive right-minus-left difference indicates dominance of the right ear and a negative difference indicates dominance of the left ear. Kimura (1961) has shown that ear dominance is a valid measure of hemispheric dominance. Positive between-ear difference scores indicate left hemisphere dominance for speech-stimuli and negative between-ear differences indicate right hemisphere dominance.

Now I wonder whether Orton, had he known these facts, would have objected to the following modification of his statement, quoted earlier: "The child who is clearly left-eared will not encounter much more difficulty in learning than the right-eared." Probably he would endorse this statement, because, now that we have better tests for this modality, both right and left ear preference seem reliably to indicate cerebral dominance. In line with Orton's thought, one may therefore state that reading ability correlates positively with the *absolute* values of the between-ear difference scores, be they positive *or* negative. In other words, poor readers should show smaller between-ear differences than good readers.

This does not mean that poor readers will show negative ear differences more often than good readers. This is an alternative hypothesis that may have a two-fold background. It may be based on a theory stating that not dominance, but dominance of the left hemisphere is necessary for an adequate language learning process. It is clear that such a theory deviates from the Orton tradition as well as from current views. The alternative hypothesis, however, may also be based on the assumption that positive right-minus-left differences do indicate a dominance of the left hemisphere, but that negative right-minus-left differences do not indicate a dominance of the right hemisphere. But this assumption lacks in logical argument and is, moreover, contradictory to empirical data. In the previously mentioned validation study of

Kimura, she found that negative between-ear differences are, in fact, definitely related to right hemisphere dominance.

In summary we may say that not only long tradition but also good theoretical grounds support the hypothesis that reading ability should be found to correlate positively with the absolute values of the between-ear difference scores.

A second point I want to talk about concerns the fact that hemispheric dominance seems to develop gradually.

Lenneberg (1967), and Satz and Sparrow (1970) have pointed out that the language functions have not reached full lateralization until the age of ten. Ten-year-old children, however, have long since been able to speak and read. Apparently the early learning-to-read process does not require full lateralization of the language functions. It is even possible to think that early reading profits by a bilateral representation of functions. The fact that it is possible to learn to read at an early age supports this idea.

But more is involved. Fries (1963), Goodman (1968), Smith (1971) and many other authors have pointed out the existence of several stages in the learning-to-read process. There are considerable differences between the early and later phases. In the earliest stage perceptual discrimination and analysis are prominent. Here the lack of object-constancy poses a special problem. Depending upon the spatial position occupied, identical forms have different meanings: give another position to the letter "p" and it is a "b," "d," or "q." There isn't a sequence-constancy either: the same letters in a different order result in different words. So in the early stages of the learning-to-read process the child is confronted with complicated spatial and temporal problems. In later stages perceptual abilities become automatisms. To quote Fries: "Responses to the visual patterns become habits so automatic that the graphic shapes themselves sink below the threshold of attention, and the cumulative comprehension of the meanings signalled enables the reader to supply those positions of the signals which are not in the graphic representation themselves" (Fries 1963, p. 132).

Benton (1962) once suggested that correlations between perceptual and directional factors on the one hand and reading-ability on the other are to be expected especially at an early age. This is reasonable considering the perceptual processes in early reading.

Now it is known that spatial perception and orientation are not mediated in the same hemisphere as the verbal-cognitive functions. If in early reading perceptual as well as semantic information has to be processed, then

this early reading may benefit from a bilateral control on a cerebral level.

In the course of the years the reading process changes in character. "The more skilled a reader is, the less visual information he needs from the page —the more he is able to predict what the unread material will be," says Smith (1971, p. 221). And he adds that predictions from meaning to visual configuration become more common. In other words, the semantic aspects of language become more and more prominent as the learning-to-read process develops.

Now I assume that parallel to this development, reading is more and more controlled unilaterally by the language hemisphere. The sensitivity of this hemisphere to semantic and connotative aspects of language was recently proven in a neurophysiological study by Matsumiya and colleagues (Matsumiya et al. 1972).

The hypothesis we may deduce is that each stage in the learning-to-read process is accompanied by an optimal lateralization pattern. The degree of lateralization most profitable for reading depends on the stage of the learning-to-read process. Good reading will not be accompanied by maximum lateralization at all ages. Statistically expressed, there is not, hypothetically, a linear correlation between reading ability and degree of dominance.

Before discussing our investigations in this field let me summarize briefly what has been said. I have pointed out that it is consistent with Orton's hypotheses to think that left- as well as a right-cerebral lateralization conditions the course of the learning-to-read process. Whether it is a question of lateralization may be seen from the absolute right-minus-left differences. If these scores do not equal zero, lateralization of some degree is proven, if they do, lateralization is not proven. In our investigations we analyze the relation between reading ability and the *absolute* right minus left differences.

The second point to which attention was called is that by the time lateralization of the verbal-cognitive functions is completed the average child has been reading for a long time. Apparently not every stage in the learning-to-read process profits by maximum lateralization of the language functions. The hypothesis is that good reading is accompanied by different lateralization patterns, depending on the stage of the learning-to-read process. In the beginning stage it may be expected that relatively good reading will go hand-in-hand with little or no lateralization, but in the last stage of the learning-to-read process good reading will coincide with maximum lateralization.

In our laboratory, lateralization has been examined with monaural listen-

ing tests. Recently we have added dichotic techniques. We use monaural listening tests often, because dichotic ones are of a fairly recent date, and at first we were not acquainted with their existence. It is now definitely established, however, that ear-asymmetry can be demonstrated with the monaural test. Not only our own results (Bakker 1967, 1968, 1969, 1970) but those obtained with monaural stimulation by Bever (1971) in New York, Doehring (1972) in Montreal, and Frankfurter and Honeck (1973) in Cincinnati prove this. With dichotic tests, both ears simultaneously are presented with different stimuli, whereas with monaural tests both ears are stimulated successively. Of course listening tests measure ear dominance. However, one is reminded of Kimura's finding that hemispheric dominance is a major determinant of ear dominance.

Recently a series of experiments was carried out in our laboratory (Bakker, Smink and Reitsma 1973). The first experiment took place with 7-year-old second graders of a normal primary school: 20 boys and 20 girls. All were right-handed. They were presented with both a monaural and a dichotic listening test. The scores of the left ear were subtracted from those of the right ear. The absolute values of these right-left differences, the so-called RLD scores were analyzed in relation to the reading ability of the children.

Children who obtained equal right- and left-ear scores with the monaural test appeared to read significantly better than children that showed some degree of dominance. In other words, 7-year-old children with absolute RLD values substantially equal to zero read better than children with RLD's that are greater than zero. Similar results were obtained with the dichotic test. (See Fig. 1.)

The next experiment was carried out with older children: 19 boys and 19 girls of a normal primary school, with an average age of nine. All were right-handed. Dominance was determined with a monaural test.

Children with some form of dominance, that is children with absolute RLD values of one or more appeared to read significantly better than children without dominance. Fig. 2 illustrates this relationship.

The graph might give the impression that the reading ability of these 9-year-old children increases as dominance increases. But this appears not to be the case. A closer inspection of the data showed that the children with RLD values of 2 read better than the children with RLD values greater than 2. The reading of these 9-year-olds evidently profited by moderate dominance.

The third investigation was done with 100 children of a normal pri-

mary school, 50 boys and 50 girls, 10 of each sex, at ages 7 to 11. The children were divided into two age-groups: 7- and 8-year-olds and 9- to 11-year-olds. Dominance was determined with a monaural test.

In the group of 7- and 8-year-olds, children with little or no dominance appeared to read significantly better than children who showed clear dominance.

In the group of 9- to 11-year-olds, on the other hand, the relations were reversed. In this group children who showed dominance read significantly better than children that showed no or hardly any dominance. Fig. 3 illustrates these results.

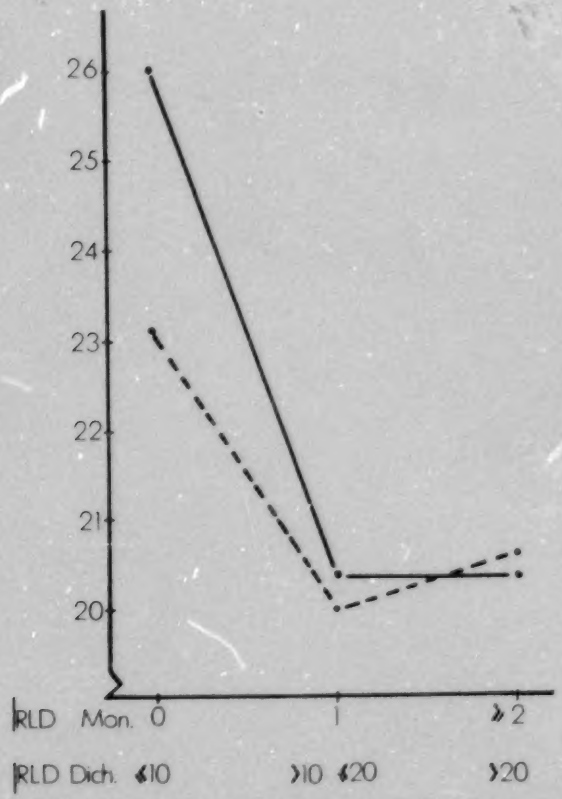

Figure 1. Relation between ear dominance and reading ability in 7-year-old normal children. Solid line: RLD with monaural stimulation; broken line: RLD with dichotic stimulation.

The 9- to 11-year-old children with RLD's of 2 continued to read better than children with higher RLD values. With the 9-year-olds of the second experiment a similar phenomenon was found. Apparently the reading of 9- to 11-year-olds does not profit by *maximum* dominance either.

The investigations discussed were carried out with normal children. The results lead to the following conclusions:

1. In younger children good reading is accompanied by little or no dominance.
2. As the learning-to-read process advances, good reading is associated with an increasing degree of dominance.

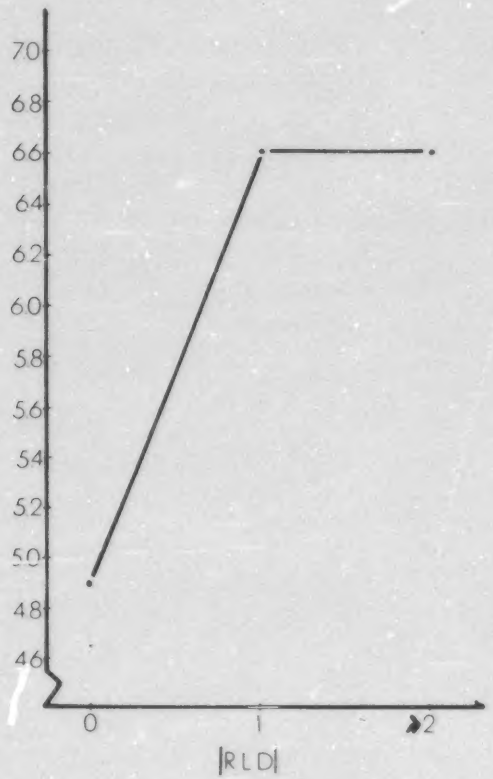

Figure 2. Relation between ear dominance and reading ability in 9-year-old normal children.

Reading skill develops with age. With dyslexic children this development is retarded, they pass through the stages of the learning-to-read process more slowly. A reading-disturbed child who is 10 years old may still be in the same reading stage as a normal child of 7.

The fourth investigation was carried out with dyslexic children: 75 boys varying in age from 9 to 13. Two age-groups were formed: a group of 30 boys who were 9 to 10 years old, and a group of 45 boys who were 11 to 13 years old. The boys showed an average reading retardation of 2 years. One could compare the reading level of 9- to 11-year old reading-disturbed children with that of 7- to 8-year old normal children, and the level of reading-

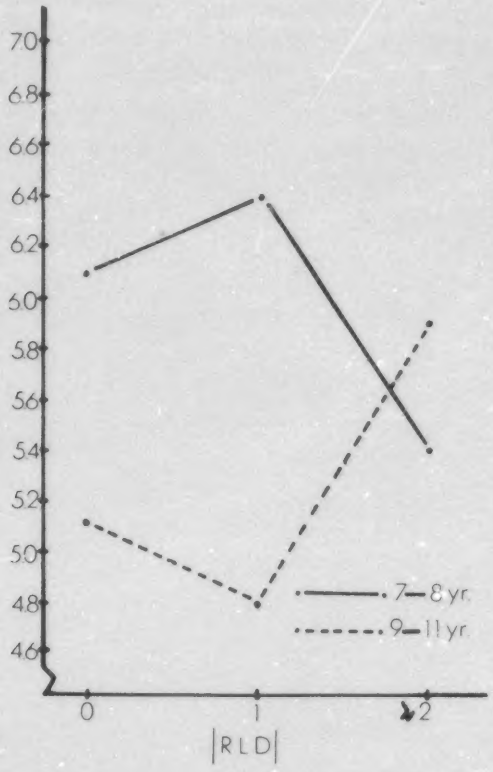

Figure 3. Relation between ear dominance and reading ability in 7–8- and 9–11-year-old normal children.

disturbed 11- to 13-year olds with that of normal 9- to 11-year olds. A monaural listening test was used.

In the group of 9 -and 10-year-olds the relatively better readers appeared to show little or no dominance. In the group of 11- to 13-year-olds, on the other hand, the better readers did show dominance. Fig. 4 renders the results graphically.

It is striking that the curves of the reading-disturbed and the younger normal children that were discussed in the third investigation are very similar. (Compare Figs. 3 and 4.) It may be assumed that the similarity of the curves is related to the equal reading *levels* of the disturbed and normal readers described by the solid and dotted lines, respectively, of the figures.

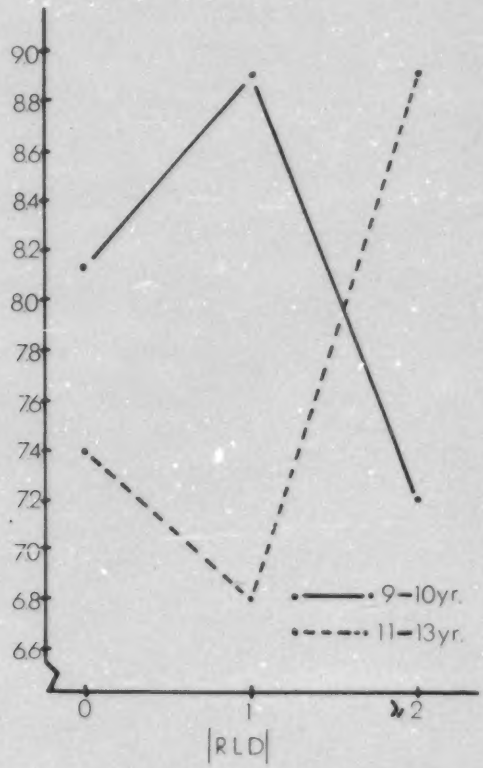

Figure 4. Relation between ear dominance and reading ability in 9–10- and 11–13-year-old learning-disturbed boys.

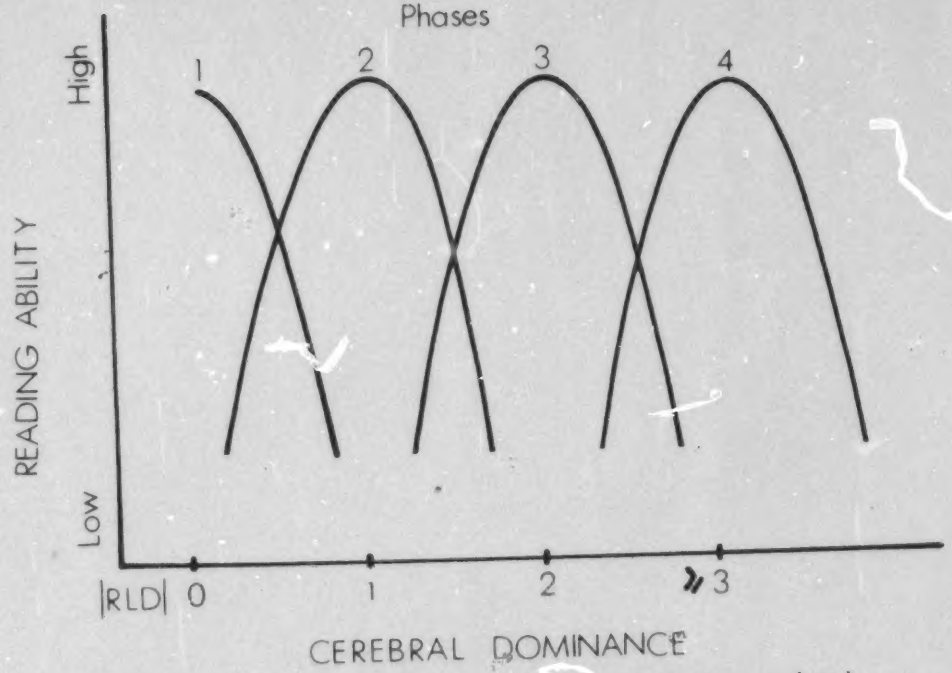

Figure 5. Hypothetical relation between degree of cerebral dominance and reading ability dependent on the phase in the learning-to-read process.

Considering all the results, one may draw the conclusion that every stage in the learning-to-read process is characterized by an optimal lateralization pattern. In other words, cerebral dominance interacts with the learning-to-read process, but this interaction is stage-dependent. Early reading seems to require no dominance; fluent reading necessitates maximum dominance. The stages in between seem to profit more from a certain degree of cerebral dominance. Fig. 5 shows a diagram of this stage-interaction model.

The results and conclusions evoke some questions. Firstly, the model suggests that cerebral dominance is not always beneficial to reading. In the early stages of the learning-to-read process, dominance seems to hamper rather than to promote reading ability. The conclusion need not be surprising but it certainly deserves further study.

There are other learning processes which do not profit from dominance. For example, in Europe soccer is a much practised game. In the past each of the eleven players had a fixed position in the field. One was either a left- or a right-winger, either an inside left or an inside right, etc. Players in positions on the left were expected to pass and shoot with the left foot and players in positions on the right were expected to do the same with the right foot. The training program was concentrated on footedness.

Modern soccer, however, is cast in a different mold. Flexibility of position is emphasized. The player is expected to pass and shoot from any position and from any corner. A modern training program and especially that for the forwards is concentrated on ambifootedness, a condition in which proficient use can be made of both feet.

Suppose that the relation between soccer skill and foot-preference were investigated. The outcome would probably be that, when strongly lateralized, footedness hampers rather than promotes the skill. If, however, a similar investigation had been carried out 50 years ago, the conclusion would have been that lateralized footedness promotes the skill.

This reminds us of the fact that skill or ability is a relative concept. Skill depends not only on the training program that is used, but also on the criteria that are set to measure it. A soccer-player may be called skillful because he scores many goals or because of his ball-handling ability, etc. Similarly, different criteria may be set for measuring reading ability. In our investigations reading ability was measured in terms of the number of words that are read correctly per time unit. One of our conclusions was that early reading does not profit from cerebral dominance. If this conclusion is proven correct, it probably has a limited validity. Suppose reading ability were meas-

ured in terms of comprehension. Then it seems to me that novice readers also would profit from cerebral dominance. The relation between cerebral dominance and reading consequently will depend not only on the stage of the learning-to-read process but also on the way reading is measured.

I have tried to show some ways in which there is a relation between reading ability and cerebral dominance. This relation appears to be stage-dependent: early reading seems to be hampered by dominance, fluent reading, on the other hand, seems to profit by it. I have attributed this interaction to the difference in character of the various stages in the learning-to-read process. Finally, I pointed to the importance of the measurement criteria.

I am aware that my argument is based partly on facts, partly on theory, and partly on speculation. I would suggest: "prove all things, hold fast that which is good."

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THE INTERNATIONAL SCENE

The first session of the 23rd Annual Conference of the Orton Society, held at Seattle, Washington in November, 1972, was entitled "The International Scene." In addition to the following Introduction by Dr. Thompson and the papers by Drs. Bakker and Strong, there was an account of the incidence of dyslexia in 272 bilingual Chinese-Canadian children by Carl A. Kline and Norma Lee which is not included here because it is already available in papers previously published in this journal and others. (See the preliminary report by C. L. Kline and N. Lee, A transcultural study of dyslexia, *Bull. of the Orton Society* XIX:67–81; and C. L. Kline and N. Lee, A transcultural study of dyslexia: Analysis of language disabilities in 277 Chinese children simultaneously learning to read and write in English and in Chinese. *J. Special Education*, 1972, Vol. 6, No. 1.)

1. Introduction

Lloyd J. Thompson, M.D.

Before our president, Roger Saunders, started on his summer vacation in Greece looking for evidence of dyslexia in Greek inscriptions, I asked him to be on the lookout for the motto about the Olympic Games. In Greek it is *"Lampodia Echontes Diadosorsin Allelois."* The translation is, "Bearing torches, they pass them on, one to another." In searching for this in a book of quotations I found that Plato said, "Those having torches will pass them on to others." I remember this quotation because it is over the entrance to the Institute of Human Relations at Yale. The architect, Grosvenor Atterbury, who placed it there gave me the translation. It was most appropriate for the interdisciplinary work at the Institute.

Mention of this motto is again appropriate because only last July 5,000 runners brought the Olympic flame from Mount Olympus in Greece where the Olympic Games originated in 776 B.C. to Munich for the recent games. This motto is also appropriate for this meeting of the Orton Society and particularly for this opening panel where runners from other countries will pass their torches on to others. Perhaps this quotation might even be adopted as a motto for the Orton Society.

Before turning to the torch bearers on our panel I want to add a flicker of flame that came to me this past summer. It seems that my best known contribution in the field of dyslexia was my study of language disabilities in men of eminence. Among these men who probably had a specific language disability was Albert Einstein. In the August 1972 issue of *Readers' Digest*, an article entitled "Einstein: The Man Behind the Genius" gave further corroborative evidence. The article started with the statement, "Albert was no child prodigy. Indeed, it was a long time before he learned to speak." However, the priceless observation is contained in a direct quotation from Einstein who said:

> I sometimes ask myself why I was the one to develop the theory of relativity. The reason, I think, is that a normal adult never stops to think about problems of space and time. These are things which he thought of as a child. But I began to wonder about space and time only when I had grown up. Naturally, I could go deeper into the problem than a child.

I wonder if he realized the implications and ramifications of what he said. It appears that along with other developmental lags Einstein was slow in developing perception of time and space and their concepts or meaning.

In connection with this I thought about a statement made by Anna Gillingham who wrote, "Acute students of biography have told us that great men often make their greatest contribution to human affairs, to art, to scholarship, along the line of some great handicap of their own early life. More than one of my difficult readers has later manifested a real flair for English expression."

Let me add another story from Ronald Clark's biography of Einstein. One day the phone rang in the office of the Dean of the Princeton Graduate school and the voice asked to speak to the dean. Advised that the dean was not in the voice said, "Perhaps you can tell me where Dr. Einstein lives." The secretary replied that she could not do this, since Dr. Einstein wished to have his privacy respected. The voice on the phone dropped to a near whisper: "Do not tell anybody, but I am Dr. Einstein. I am on my way home and have forgotten where my house is." Was this "a mere eccentricity," or another facet of what we would call the dyslexia syndrome?

2. Language Disability in the Hispano-American Child

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This paper was presented at the 23rd Annual Conference of the Orton Society in Seattle, 1972.

"Language Disability in the Hispano-American Child" is a theme which obviously has to be defined. Central and South America and the islands of the Caribbean embrace millions of people and extend over a vast area. Obviously we cannot talk about it all, and therefore I have decided to limit my discussion chiefly to the areas which I know best, and which relate most closely to the vital problems of Hispano-American children in the United States and Puerto Rico.

I now live and work in San Juan, and before going there lived for six years in Cuba. My husband is fourth generation New Mexican, his great grandfather having gone out on the Santa Fe Trail. Our time spent in that state made us aware of and concerned about the problems of Mexican-American children in the Southwest. It is largely the children from these areas that are caught up in one of our country's toughest educational problems.

There was a time when a consideration of specific language disability in the Hispano-American child might have seemed irrelevant in American education. It is no longer irrelevant. It is a crippling problem faced by thousands of students of Spanish origin attending public schools in the United States. A report in the San Juan *Star* of August 7, 1972 claims that the United States has an estimated 15 million Spanish-speaking residents—more than any other nation with the exception of Spain, Mexico, Argentina, and Colombia. The most recent study, made by the Fleischman Commission, on the education of Puerto Rican children in New York City charges widespread reading and arithmetic retardation and describes as appalling the 52.3 per cent high school dropout rate. The Commission reports that only 4,000 of the 135,000 Spanish-speaking youngsters were being reached with the new bilingual programs. The report goes on to assert extensive and comprehensive academic failure.

In the struggle for social and economic survival in our highly competitive society, reading failure is disastrous for many. The breakdown in self-respect, the frustration and hopelessness, eventually mean dropping out of school, unemployment, and all too frequently delinquency and drug abuse.

Here are human beings who because they are defeated before they begin will likely not be able to realize their life potential, and who will too easily become the underdogs, the dependents, the misfits or the malcontents in society. These problems have now become inflammatory political issues demanding solutions. The purpose of this presentation, however, is not to generate political heat, but to attempt to analyze some aspects of the problem.

In the United States the "melting pot" idea of language has lulled us into believing that each new wave of immigrants entering our country will automatically absorb the English language and that their children will miraculously "pick it up" and "naturally" learn to read in English. As one old-timer in New Mexico said to me as I was attempting to discuss the problem with him, "Ah—they ALL learn to read!" Whereas earlier immigrants had to assimilate and learn English or perish, modern transportation has changed that picture; for with the advent of cars and airplanes, we have thousands of children in our schools who live in two cultures. They shuttle back and forth between Puerto Rico and New York, or between El Paso and Juarez, as some people do from Brooklyn to Manhattan. Many children live in sections within our country where they hear only Spanish in their communities. School, with its English, is a new and frightening world. It is strange that in the continental United States we have a somewhat blasé attitude toward the child who has to function in a second language, because we as a people are notoriously bad at both teaching and learning a second language. We go abroad and expect the world to speak to us in English. Why then should we take it for granted that the Spanish-speaking child is going to find it so easy to function in our language? As one teacher said to me of a troublesome student—a new arrival from Latin America—"If he would only try to speak English!" A better beginning might have been for the teacher to try a phrase or two of Spanish. They both could then recognize their mutual problem and start off on an equal footing.

In order to comprehend the problem of the Spanish-speaking dyslexic faced with an English speaking school system, we have to understand what his problems are in his own Spanish language and setting. Puerto Rico provides us with an excellent laboratory because there we can observe some dyslexic children trying to cope with their problem in Spanish, and others in bilingual school situations. In Puerto Rico there are various school systems with distinctive philosophies of language education; from these systems we have students for intensive study, and the different systems provide a basis for comparison.

The largest system and the greatest source of students for case study is the public school which is conducted in Spanish as the official language. Reading is taught in the first and second grades *in Spanish* while *oral English* is introduced. Not until the third grade is beginning reading in English started on a primer level. During the elementary and high school grades, English is studied every year as a second language.

Another system comprises the Catholic private schools known as *colegios*. In most of these the children start to read Spanish in the first grade, as in the public school, but English reading and some English texts are introduced in the second grade. In many of the *colegios*, by the fourth grade most subjects are being taught with English books, even though the children may not understand them. What usually happens is that the teacher (or parent) translates the books, and conducts the class in Spanish, thus depriving the child throughout most of his elementary schooling of the joy of books and the ability to use them independently in his own language. The negative effect of this practice can be seen in the reluctance of many college students, even on a graduate level to become immersed in books with any degree of pleasure.

In a third system of private schools reading in both English and Spanish is begun at the same time—in the first grade. Many dyslexic children have been found from all three systems, but those who are most confused and most difficult to remediate in either language are those who have begun the reading process in both languages at the same time. In these schools, children with even a trace of the dyslexia syndrome do very poorly and we see case after case of children who have not learned to read or write meaningfully in either language by the time they should be ready to enter junior high school.

It is noteworthy, however, that in English-language schools where there is a bombardment of English on the playground and sports field, in the cafeteria, on the bus and in the classroom, if the child has not been pressured to read before he has this oral base, he will do better and progress faster than his counterpart whose contact with English is chiefly academic. This may suggest one of the facets of the problem of the mainland inner-city child who lives in a Spanish-language community, and whose companions are predominantly Spanish-speaking. He simply does not have enough English input to form a base for the symbol-sound relationship—and it is impossible for a child to learn to read meaningfully a language that he cannot speak.

Let us now go from the general problem of Hispano-American children to the problems of these with specific language disability, who are the subject of concern of this paper.

Without elaborating on the various definitions of dyslexia, we could describe these students as those who, having no serious sensorial or intellectual deficits, still fail to make satisfactory progress in reading and writing skills in any language to such an extent that they are handicapped in the pursuit of their education. Sometimes definitions include the provocative little phrase, "Who, in spite of adequate teaching do not make progress." In Latin America we use the phrase *dyslexia escolar* to describe the student who has a problem precisely because his basic weakness in the language area has been compounded by inadequate, premature, or ill-conceived instruction. Many of the students who fail, fall into this category, rather than into that of the severe congenital developmental dyslexic. There is unquestionably a whole spectrum of children with varying degrees of the disability whose performance is characterized by difficulty in acquiring a second language, by imprecision in oral and/or written speech, by omissions, transpositions and reversal of letters, syllables, words and phrases, in Spanish as in English.

Observation of these children in the various school programs previously described points to the great advantage of beginning reading in the mother tongue. If a child by the end of the first grade has had difficulty with reading in Spanish, he obviously cannot be successful in English. By beginning language and reading instruction in Spanish, we can more easily detect and remediate the child who has this problem.

Many Puerto Rican parents, being American citizens, realize the importance of English for their children's future welfare, and insist that they be educated in English, even after a language disability has been noted and brought to their attention. On the first grade level this can be traumatic to the point of rendering the child speechless in school. These children often become the silent ones, never daring to communicate even in Spanish. The demands of reading in an unfamiliar language are so overwhelming to them that they simply retire from oral communication into their own private world. These children usually begin to respond to educational therapy only after they have been moved to an all-Spanish school situation and given time to respond linguistically to their peers.

Those children who have not manifested such severe emotional reactions are frequently passed from grade to grade with the hope that "next year he'll catch on," but they end up in the fifth or sixth grade, unable to function acceptably in either Spanish or English, and totally unable to cope with junior or senior high school.

Now consider the child who presents a specific language disability, even though initial instruction is in his own language. There has been a widespread, but erroneous idea that there are very few Spanish-speaking dyslexics. The reason usually given is that Spanish is a phonetic language with a closer phoneme-grapheme association than has English. The cause of the dyslexia, however, is not in the language but in the child. Dyslexia occurs in Spanish just as frequently as it does in English. Although we have no reliable statistics, I would estimate from what I have seen in Puerto Rico in both public and private schools that the number of dyslexics would be considerably higher than the national average in the United States. In the more economically depressed areas and in rural zones, a very conservative estimate is 25 percent and I have seen schools where the percentage has been even higher.

There are many contributing causes which compound the basic language disability. Every country has unique aspects in its culture and customs which contribute to the problem. In Mexican-American communities it is frequently a case of "Spanglish" where the child is too far removed from his Spanish origin to warrant using that language, but not familiar enough with English to express himself adequately, or to understand a teacher who comes from outside his own culture.

The Puerto Rican family may travel back and forth between the mainland and the island in response to employment needs and opportunities. The children have to "fit in" wherever they happen to be. The schedules of these changes in location rarely correspond to the academic calendar, but rather to economic necessity. These children arrive at a mainland school unable really to speak or read Spanish. A classic example of this was to be seen in Alberto Juan, age twelve. Born in New York, he returned to Puerto Rico at two, transferred again to New York at four and was sent to a public school in New York at age five. His mother spoke only Spanish. In the middle of the fifth grade he was sent back to Puerto Rico and placed in a regular fifth grade classroom. I was asked to test him because of his severe school problems. He was having difficulties with English reading on the first grade level, and could not even read "Mama me ama," in Spanish. He was a plucky boy, however, and attempted some creative writing in the form of a letter to his friend Felix in New York.

I think that he was willing to try because he really wanted to get a message back to Felix, and I promised to help him if he would tell me what he wanted to say. Here is the letter.

dear

Felis inom goin to veicdt you. and I hope daet you will Be daer at the airpont at 12:00 A.M. and I can waet to Get to the ciey. The moment wan in Get to mae hoes inom goin to play waw you, and you will play wow me. the noes day you and me are going to tok a ried. and the noes day you and me are going to the berd.

Translation:

Dear Felix:

I am going to visit you and I hope that you will be there at the airport at 12:00 a.m. and I can't wait to get to the city. The moment when I get to my house I'm going to play with you and you will play with me. The next day you and me are going to take a ride and the next day, you and me are going to the beach.

Alberto Juan was from a poor home and lived in a *caserillo* (low-cost government housing). He had had little opportunity to receive help, but there are others, not economically or culturally deprived, whose problem of dyslexia has been equally devastating.

One night I had a phone call at about 11 P.M. A distressed father was calling from New York asking for an appointment for the next day in San Juan for his 14-year-old boy. This seemed like a long way to come for a diagnosis! The reason became clear the next day. The boy was involved in drugs, had threatened suicide, and was in deep trouble. He had psychiatric examinations, special schools, and numerous psychological evaluations, but strangely enough his crippling dyslexia had never been mentioned. In none of his records could I find anything that indicated to his parents or teachers that the boy had a specific language disability and could not read. This boy and his older brother, who had a similar history, were from one of Puerto Rico's outstandingly brilliant families, with members in the upper echelons of professional life. I asked the older brother, who had also been involved heavily in drugs, if he felt that his dyslexia had contributed to his problem, and to that of his younger brother. He answered by telling how the family had gone back and forth every two or three years between Puerto Rico and the mainland. With every move, the boys were put back a grade. He said, "By the time I got to the seventh grade, still not able to read, I decided to distinguish myself the only way I knew how—getting into trouble. I wanted the chicas to like me and think I was smart, so I started pushing drugs to get the bread I needed. My kid brother saw how I handled my problem and started to copy me."

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After deep involvement in drugs, both boys "kicked the habit" and tried to begin again in Puerto Rico. It has been a hard pull, but both are progressing. One of the greatest factors in their rehabilitation has been an understanding of the nature of their original school problem, and therapy for their disability.

Another factor contributing to the high incidence of dyslexia is economic deprivation. Overcrowded living conditions, both within the home and in the community, produce an excessively high noise level from which there is no escape. Children raised in this environment are often high-strung, volatile, and over-stimulated. They often keep their own hours, and attend school irregularly. Others react to overcrowding and noise by becoming excessively passive, blocking it all out and living in their own withdrawn world.

An impoverished diet and malnutrition, which stunts growth and development, can still be found in many Puerto Rican children. Informed medical teams indicate a serious lack of protein in the diet of many rural Puerto Ricans. Even when moving to the city they tend to preserve the same dietary habits. Some of the children who perform inadequately in first and second grades are physically several years below the norms for Puerto Ricans in general.

Neglected or inadequate pre- and post-natal care can be a significant factor in Latin America. In Puerto Rico in recent years, facilities for the poor have improved through a system of government clinics and a huge specialized medical complex, but there are many who do not avail themselves of these services. Consequently we find a great many cases of impairment, due at least in part to neglect.

The school systems and social system in general do not make adequate provision or allowance for these inadequacies. Children are still supposed to go into the first grade at six years of age, with or without kindergarten and to start the reading process—ready or not ready. Because of limited facilities, and the constant pressures of an ever-increasing population, repeating grades is usually discouraged, and so the child with a specific language disability moves on, and his problem compounds itself.

Tradition and custom have added their hazards. The traditional family gatherings on Sunday and holidays are golden opportunities to compare the progress of all the cousins. This is sometimes the criterion for determining what grade or which school a child shall attend regardless of its suitability.

With regard to laterality, many parents and teachers report that in "their day" it was considered very bad to be left-handed and therefore it was com-

mon practice to force a child to write with the right hand. There is still a marked tendency in the family to discourage the use of the left hand. The result is sometimes seen in the impossible writings of a *"surdo contrariado"* —a person really left-handed who has been changed to the right.

For the child whose language milieu is a limited vocabulary and explosive short commands- *"Vaya," "Vamos," "Vete," "Comida,"* processing instructions or listening to explanations can be a confusing task. Also, where deficiencies in articulation are part of this language milieu, the specific language disability child needs far more help with auditory perception than the average child. Each country in Latin America has its own dialectal variations. In Puerto Rico the sounds of L and R are commonly used interchangeably. M and N are confused more easily than in English. The sounds of C and G, D and T, P and B are common auditory confusions.

Ironically, one of the most significant contributing factors to compound the specific language disability problem has been the widespread use of the "look and say method," known in Spanish as *"el metodo global."* Since its introduction into the Puerto Rican school system, there has been an inadequate emphasis on phonics. We now find the same kinds of problems occurring in Spanish that we find in English—children memorizing primers and later guessing at unfamiliar words, for lack of a better tool. Many times, those with a specific language disability problem are therefore not identified until the third or fourth grade, if at all.

The previous discussion of contributing factors, each of which in itself could be a cause of reading failure or retardation, points up the need for adequate diagnostic tools and procedures. There are several satisfactory standardized Spanish adaptations of the WISC. The Slingerland Screening tests have been adapted and are being tested in selected public schools of Puerto Rico. The departments of education in various Latin American countries have reading tests, but these are still inadequately standardized for precise achievement levels. Informal reading inventories on each grade level are usually more accurate and more revealing than the so-called graded tests. Oral language evaluation is necessary. Samplings of creative writing, tests of dominance, body image, and sequencing, as well as the specific components of a clinical diagnostic assessment in visual, auditory, and motor areas are essential. The parental interview for birth, developmental, and school history provides all-important elements in the Spanish diagnostic evaluation, just as in English. In Spanish, however, because of the lack of standardized norms in the educational evaluation, we have to rely more on direct observation of the child's

performance and interpret it in the light of his background, family history, and academic opportunity.

It is important for the diagnostician to remember that it is never sufficient to place a label on a child's condition. It is supremely important to analyze every aspect of the child's work, not only for the purpose of knowing *what* and *how* he needs to learn, but frequently to change his school situation, be it the grade, teacher, or program, in order to provide a more supportive atmosphere that will not undo the effect of the therapist's work.

A research report issued last year, and published in the *New York Times*, under the title "Inner City Children Can Be Taught to Read—Four Successful Schools," lists some conditions that are common among the successful schools and usually not present in unsuccessful inner-city schools. High expectation with regard to the potential achievements of children and a good atmosphere marked by order, sense of purpose, relative quiet, and pleasure in learning were found to be important. A strong emphasis on reading, with the inclusion of phonics as a method of teaching, and additional reading personnel were cited as present in all of the successful schools. To these basic conditions we must add some extras for our Hispano-American children such as a heavy concentration of oral English starting with the kindergarten, transition language classes for older students transferring from a Spanish-speaking milieu, bilingual teachers who can communicate in either language with the child, and provide an element of *personalization* of instruction. Traditional age-grade relationships should be abolished in order to allow the child the freedom to develop and mature, to free the parents from the fear and stigma of their child's failing a grade, and to release the school from the bind created by this arbitrary and unuseful tradition.

Under these conditions the many cases of *"dyslexia escolar"* or school-created dyslexia could be drastically reduced, both on the mainland and in Puerto Rico. Teachers of special education and language therapists could then concentrate their attention on the child who is truly handicapped by a specific language disability, and who even under the best of circumstances finds himself weighted down by the burden of his impediment.

Whatever the language or languages used and however well they are taught, there will be a few children whose language learning problems will be specific and severe enough to necessitate special individual or small group teaching. But we know that these children, given appropriate help, can master their mother tongue to the degree that they can make educational progress consistent with their general ability and their other talents and interests. It is this group which is our special concern and responsibility.

3. Dual Remedial Training of Dyslexic Children in Poland

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The problem research team of the former Psychic and Child Psychiatry Department of the Polish Academy of Sciences, including physicians, a psychologist, and a physical training specialist (the latter two both teachers with master's degrees) have worked on the problem of dyslexia in early school age children. The team has been able to work out specific medico-psychological diagnostic methods as well as certain psychotherapeutic procedures.

Many years of research have led to the conclusion that disorders of psychomotor development, and of nervous processes, and psychodynamic disturbances are all involved in dyslexia in children; therefore, one-sided remedial training of reading and writing abilities seems to have failed in thoroughness and completeness and, hence, in effectiveness.

For this reason the method of manifold training procedures—dual remedial training of dyslexics as described here—has been worked out. This brings together and synchronizes the efforts of the psychologist and the psychomotor reeducator. The method aims at:

a) removing the symptoms of dyslexia;
b) remedial training of disturbed functions;
c) therapy for psychomotor deviance (inhibition, instability, intensified excitability).

Intermodal coordination is the characteristic feature of this method. This involves training of the same function, for example time-space orientation, by both the psychomotor therapist and the special reading teacher with the help of various teaching devices. The psychomotor reeducator makes use of reading and writing pedagogy in reeducation of psychomotor functions, while the psychologist introduces into his classes many movement elements, especially relaxing movements of palm and forearm. Such remedial training is of great importance at the introductory and initial stages, as it helps the hitherto frustrated child to go smoothly into a single direction of training.

The range and "dose" of the interrelated exercises depend closely on the individual child and stage.

The specific *language* reeducation is carried on under the guidance of the psychologist. It usually includes visual and aural analysis and synthesis, time-space orientation, training of aural-visual skill, and step-by-step progress in cumulative skills, starting with single graphic-aural elements (letters and sounds) and passing on to more complicated ones (words and sentences).

The complementary psychomotor reeducation relates to directional and organizational disturbances which, by confusing and handicapping the child's sound-symbol representation ability, lead to writing disability. This type of reeducation is carried on in classes guided by a teacher of physical training who holds an M.A. degree and who has been trained in problems of dyslexia, psychotherapy, relaxation, and psychomotor reeducation.

The synchronized cooperation of reeducators should begin with careful diagnosis of each student following a thorough medico-psychological examination with particular reference to (a) assessing functional disorders resulting in reading/writing disability, and (b) defining the character of writing/reading difficulty in the individual child.

The complexity of specific language disabilities makes it essential that all the members of the team should consult one another, not only at initial stages of retraining, but continuously, especially when dealing with more complicated cases. Exchanging observations and conclusions will help team members arrive at the right working method for each child with little time wasted. It is also necessary, from time to time, to consult the parents and the school the child attends.

The retraining classes should be conducted individually by the psychologist—conditions permitting—except during the introductory stage when it is generally preferable to train children in groups. In the last stage of retraining the classes are also conducted in groups and should feature the element of emulation, i.e., games, competitions, etc., thus giving the child the necessary stimulus of success and the satisfaction which increases his self-confidence.

Psychomotor retraining classes consist primarily of physical exercises. Several children work together with careful attention to individual needs and possibilities. Normally, the retraining should be completed within a year; but there are exceptions. This period is divided into two stages.

During the first or introductory stage the child adapts himself or herself to the new environment. The atmosphere of warmth and friendliness will give the child self-assurance and confidence. The therapeutic element is of

paramount importance. The child is encouraged to act freely while he becomes gradually accustomed to guided work. Jig-saw puzzles (pictures, geometric forms, letters—often made by the children themselves) painting, drawing, sketching and clay-modeling, all help the child to adapt and relax, while they also give the psychologist opportunity for observation. Toward the end of this stage reading speed is tested. The speed and the mistakes are carefully noted and the test is repeated at the very end of the reeducation.

Psychomotor exercises are usually games that involve balls of various sizes, weights and colors, and sand bags or building blocks. Gradually the child's posture is corrected by introducing static coordination exercises, such as carrying an orthopedic stick, using the orthopedic mirror etc. The next phase is the introduction of dynamic coordination exercises involving catching and throwing and, in general, running and jumping dexterity. These are interspersed with preparatory exercises in gross movement and global relaxation. The children are taught to differentiate between the tonic and relaxing movements, especially those of the upper limbs. Simple exercises in body diagram orientation, which help to clear up the left-right confusion, are also introduced in the form of kindergarten play.

The second, or language-specific training, stage stresses the individual psychomotor reeducation exercises while the therapeutic language classes are carried on simultaneously. The gradual increase of difficulty levels and of mental, motor and psychic efforts receive special attention in both the reading-writing training and the concurrent tonic-relaxation movement exercises while the control of psychomotor excitability (disinhibition, instability, intensified excitability) is carefully being modified.

The retraining of reading and writing begins with simple units (letters, syllables) with a variety of techniques used. Skill is cumulatively trained through a step-by-step progression to more complicated letter-sound patterns. Along with teaching individual letters and phonemes, attention is given to development of basic intellectual operations, such as recognition, comparison, differentiation, and classification as well as time-space (directional) orientation.

To illustrate the principles of our method we present the case of a 10-year-old fourth grade boy who stayed at the Child Neuropsychiatry Sanatorium in Zagórze from November 4, 1964, to June 23, 1965. The medical and psychomotor diagnosis was: dyslexia and dysgraphia, environmental reactive neurosis, psychomotor and affective excitability, uncontrollable movements and lack of concentration. The boy was frightened, irritable and

dejected, with an inferiority complex towards his friends and particularly his twin brother. He reacted painfully to his school failures and family conflicts. He was easily tired and aggressive when irritated. He was found not to be mentally retarded. His cross-lateral audiovisual analysis was two years below his age level. He had body diagram disturbance and directional difficulties, disturbed symbolizing ability and very low manual dexterity. He reversed, confused and omitted letters. He took *o* for *a*, *m* for *n*, *d* for *t*, *s* for *z*. A very slow reader, he read letter-by-letter.

In the introductory stage the retraining, carried on under the guidance of a psychologist, included: (a) copying through carbon paper pictures the boy found interesting (flowers, animals, cars); (b) free and controlled finger-painting; (c) imitating and colouring geometric forms, the boy telling the teacher which direction he was moving his hand while drawing; (d) making scrap-books; (e) recognizing and differentiating sounds (timbre and pitch); graphic presentation of rhythm groups of syllables and words, graphic representation by rhythmic movement; (f) identifying letters, and reading them by following their contours with finger or pencil; (g) practicing directional orientation through games and plays.

In the next stage of language retraining proper the boy performed the following exercises:

1) Looking at the pattern word, the boy filled the blank with the right letter saying its name aloud and naming its place in the word. Then he wrote the word dictated to him (Fig. 1).

krowa	lampa
krowa	.a.pa
k..w	l..p.
..o..	..m..
garnek	balkon
g.rne.	b.lko.
.a.n.k	.alk.n
..rn..	.a.ko.
....e.	..l...
krokodyl	biedronka
k..kod.l	.ie.ro.ka
..ok.dy.	b..dr.nk.
...k..yl	.i.d.o.k.
.r..o...	..e.r....
..o.....	.....n..

Figure 1. Student's form with blanks to be written in to make pattern words.

2) He was asked to react to any /a/ or /o/ sound heard in a word by hitting a little drum or knocking once or twice, respectively. He started with simple words and proceeded to more difficult ones.

3) He was told to make up as many words as possible out of a given number of certain letters freely repeated (*a, k, t, r*). A list of such words is good material for visual and aural comparison, aural localization of vowels and "top speed" reading (Fig. 2).

Figure 2. A Polish student's list of words built up from selected letters.

4) With a few letters—*b, d, g, p*—the boy had to form the biggest number of words in which each letter indicated could be repeated an unlimited number of times. The formed words were written down in the following sequence—first one-syllable words (among them words of two, three, or four letters) then two-syllable words, three-syllable words, etc. Within each syllable group the sequence of words from the shortest to the longest was strictly observed (Fig. 3).

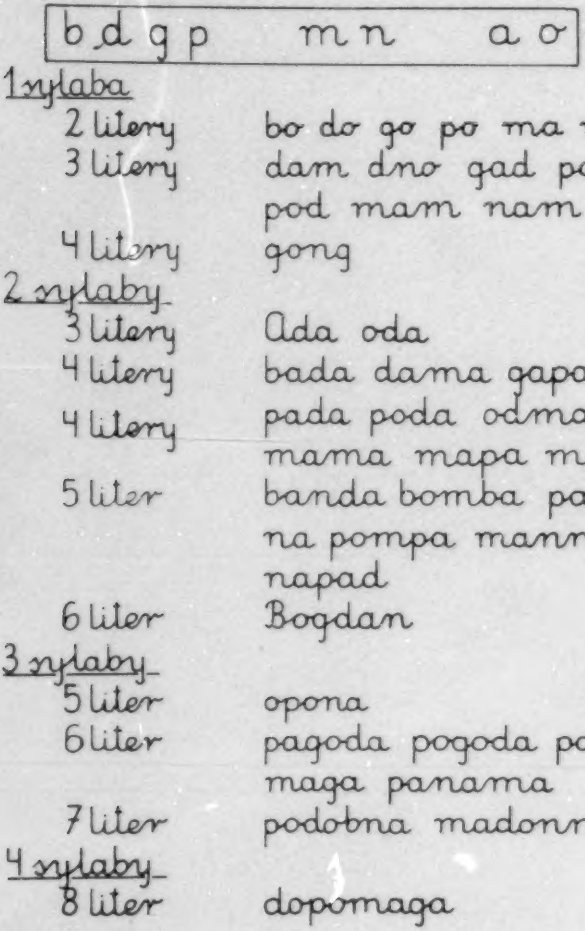

Figure 3. A list of words with increasing numbers of syllables and of letters which could be repeated without limitation.

5) In given pairs of words the boy crossed out in both words the letters which repeated. The letters which did not repeat in words were written with red pencil. (Similar pairs of words with the same letters repeating may be prepared by one child for the other during group classes) (Fig. 4).

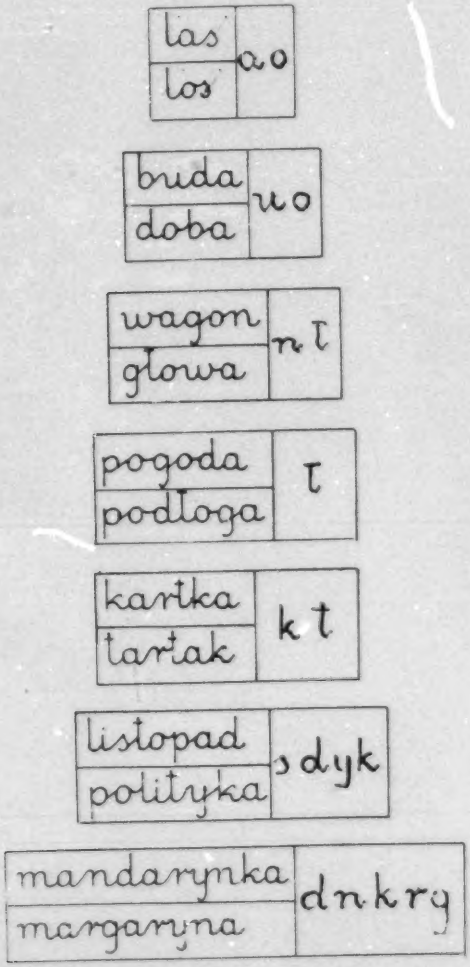

Figure 4. In each of these pairs of words, the student was asked to cross out letters that were repeated, and to write the letters that were not repeated.

6) The boy was given a number of pictures with some words thematically connected with the pictures. In the words the letters *m* and *n* mixed up by the boy were omitted. The boy completed the blanks with appropriate consonants. Similarly one can use another expanded pattern made up of the biggest number of words (a) logically connected with a picture, or (b) with *m* and *n* specially indicated (Fig. 5).

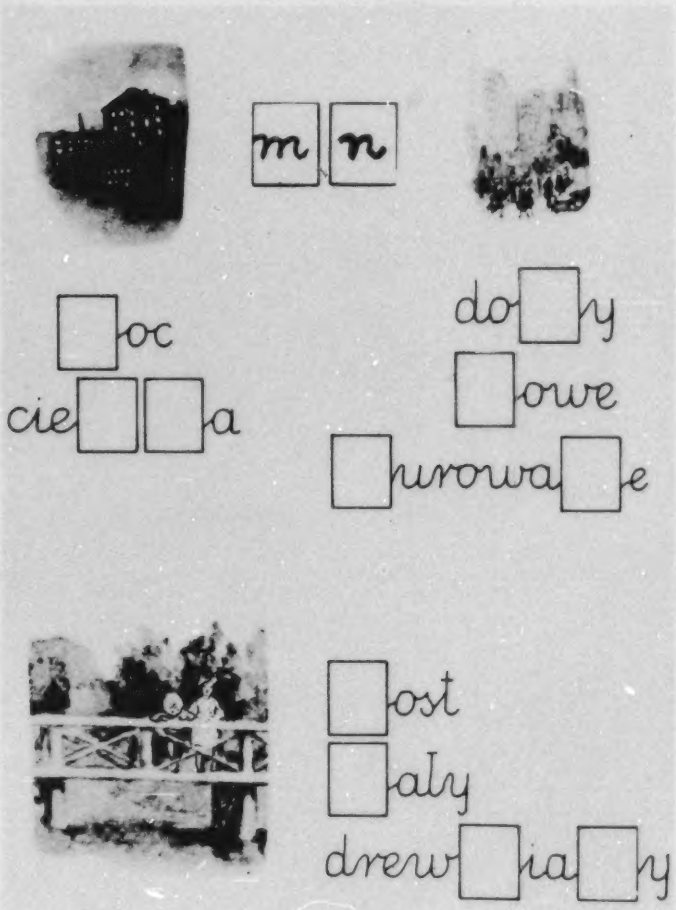

Figure 5. Words and pictures are related; the student is asked to fill in either *m* or *n* (letters which were commonly confused)

7) In given one-syllable words with *m* or *n* the boy completed the blanks with the missing letter. The exercise complemented exercise 6 (Fig. 6).

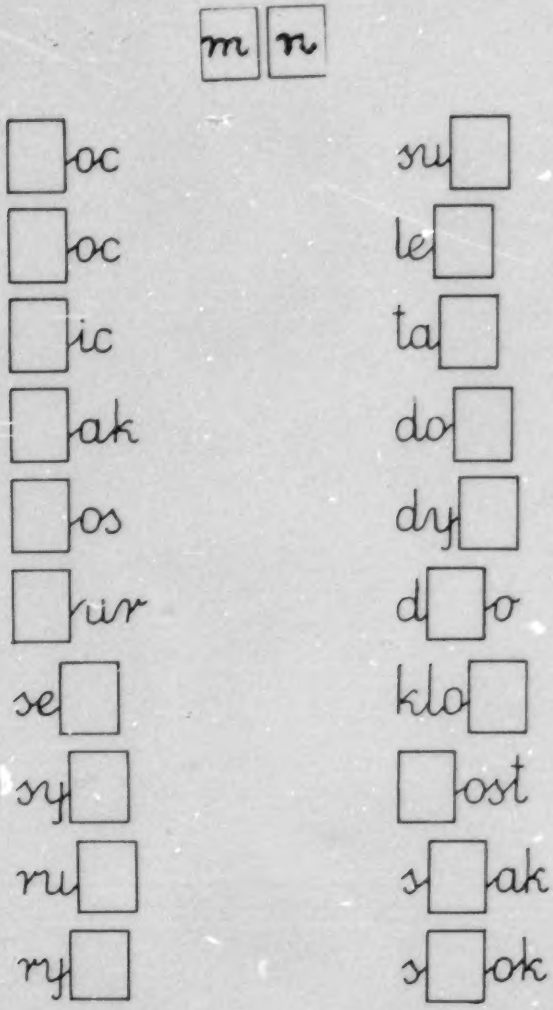

Figure 6. As in Fig. 5, the student is asked to fill in *m* or *n* to complete each of the one-syllable Polish words.

(Other letters and sounds confused by a pupil may be presented in similar exercises.)

At the same time the boy was having classes in psychomotor retraining in a group of several children, first introductory initial exercises and then retraining of disturbed excitability and psychomotor functions (hyperactivity). These classes included motor training exercises introduced one at a time until all were being practiced in each lesson:

1) throwing and catching a ball of about 2.5 inches diameter, first with two hands and then one or the other, with choice left to the boy;

2) lying face down and throwing and catching a small beanbag with two, then one hand at increasing distance;

3) lying on the belly (posture-correcting position) two children facing each other. The children (a) throwing the beanbags with breaststroke movement of hands, and (b) pushing simultaneously a 20 cm diameter ball with two hands at increasing distances;

4) trying to throw a beanbag held between the feet while lying on the belly, face resting on fists (a) to another child, (b) aiming at square block, (c) aiming at a large ball;

5) Various introductory relaxing exercises were introduced, including (a) lying on the back clenching fists, and (b) opening the fists "shaking-off-water" movements, which teaches conscious relaxing of particular parts of the upper limbs, especially the most involved one, the palm;

6) Exercises of concentration giving the pleasure of overcoming some difficulty, thus relaxing and developing confidence and self-assurance; these included (a) "tight-rope walk" along a line, (b) walking on a bench with a sand bag on the head, (c) walking on an overturned bench, hands outstretched, and (d) walking along two benches set perpendicularly (retraining left-right confusion);

7) Breathing exercises in standing and lying positions; proper breathing through the nose with and without movement of arms, with particular attention to exhaling phase (especially important for stammering children).

In addition to these motor training exercises, the boys' classes included motor retraining—the next phase—in coordination with language training. To the above dexterity, coordination, and orientation exercises some specific exercises related to particular writing and reading disabilities were added during the exercise period, and these were closely related to those guided by the psychologist-teacher. For example, the children drew the ball or the beanbag on the blackboard following the contour of the object with their fingers. Then, several classes later, the exercise grew gradually more complicated to become a kind of playful competition as they were told, "Hit a large ball with your bean bag with a breaststroke movement, crawl to retrieve it, run to the blackboard and draw the contour of the bag." In the next class period

the instructions were, "Draw a ball (circle) or a bag (square)." Next class, "Write *o* or *a* in a circle and square, respectively, and name them aloud."

As in the psychological reeducation class, instead of the vowels *a* and *o* being used in the next step, the consonants *m* and *n*, *b* and *d* (which were also confused by the children) were used. After they had completed a related exercise in static-dynamic coordination, the children drew with spacious movements on the blackboard or on the floor the rectangles and the squares into which they were putting *m* and *n*, and the other geometrical figures for other consonants *b*, *d*, *p*, *g*.

In the exercise period more relaxing exercises were added, bearing in mind a given boy's psychomotor excitability, employing the Wintrebert muscle relaxation method of palm, forearm and arm, and lower limbs, and self-massage of the face. The children were given a wider range of breathing exercises, e.g., blowing at a ping-pong ball to hit an object, or blowing at a piece of paper while lying on the back after inhaling deeply through the nose.

A variety of directional orientation exercises of graded difficulty has been used, such as asymmetric limb movement, goose-stepping, Indian-file marching left and right, and drawing on the blackboard. In later stages of retraining some closely related elements for correcting reading disturbances have been employed, such as bodily forming block letters out of group of children, e.g. A, M, O, N, T, D. This reinforced the patterns in their heads with dramatic vividness. The children are also given time orientation and rhythm exercises, and they are taught to represent sound sequences with graphic symbols in the form of sequentially patterned circles. For example, for two claps—pause—two claps, the child draws OO OO. Or for three claps—pause—one clap, he draws OOO O. At another class the reeducator may guide and direct the children in their various activities, e.g. lying on the belly they set patterns of small balls, wooden beads etc.

Of course, the sample exercise patterns or procedures which we have described are but a small part of the comprehensive retraining program. They cannot satisfy all the needs of the educator readers, but suffice to present our concept of coordinated retraining and to demonstrate a number of typical exercise patterns. Our children have found this structured, coordinated approach to language retraining interesting and pleasurable, and they have made good progress through it toward normal functioning in the regular classrooms to which they returned after their terms in the special program.

In conclusion we would like to emphasize the fact that we have found

the procedures selectively suitable for normal lower grade primary school children as well as for older language-disabled children, and that some elements of the reeducational procedures seem to be of use in preventing the problems of specific language disabilities.

Note. In 1971 it was my privilege to visit some of the classes from whose carefully structured programs the examples here given have been chosen. Although the Polish language was entirely strange to me, the theoretical framework was familiar. The lively variety and therapeutic warmth were happily noticeable. It was interesting to observe the intersensory, patterned learning in the visual, auditory, haptic and tactual modalities, so similar to many of our own programs, a common approach to a common problem, independently arrived at. The differences in the specific languages served to point up once more the universality of the human language function and its phenomena.

—*Editor*

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4. A Remedial Program for a Senior School in England

Mary Manning-Thomas, L.C.S.T.

This is a report from a Senior Speech Therapist and Remedial Teacher who has worked in the field of severe language disorders for the last 30 years, 12 of them in a diagnostic unit with a team headed by the late Dr. Charles Worster-Drought, the neurologist, and for the past nine years at Brickwall House, Northiam, Sussex, a school for specific reading disorders, continuing her work with aphasic children throughout. (The paper comes to us through the courtesy of Admiral Sir John Frewen, Chairman of Governors of Frewen Educational Trust at Brickwall House, a school about whose program our British friends are most enthusiastic.—*Editor*)

Three major events in Britain recently have stimulated interest in the study and treatment of severe reading disability and with it a desire to ignore controversy over nomenclature. In 1970, a Government Act required local authorities to provide for dyslexic children under their care; then, in November 1971, came the report of a Government inquiry which, though it rejected the use of the term "dyslexia," recognised that there was a definite "condition" causing specific reading disability. Three months later, the British Dyslexia Association was formed and there are now more than twenty-three local associations using the term in their description. Ironically enough, in spite of this confusion, more children are being diagnosed and suitably placed than ever before—a triumph over red tape, but leaving a problem which needs resolving as soon as possible.

Most teachers and therapists in the remedial service, however individual their approach, recognize a set of constant features of this condition and can plan, therefore, an adequate program of remediation. Over a period of years, a private school in England, under the chairmanship of Admiral Sir John Frewen, with 74 pupils, has gradually built up its provision of remedial teaching for from two to sixty boys, with recognised degrees of severity in reading and writing delay, and often showing the known features of dyslexia. Several have residual speech defects or an earlier history of delayed language development, with a slow gain in vocabulary.

My main experience, when I joined the school, had been with adults suffering the effects of traumatic conditions following stroke or injury, and with speechless children suffering from congenital auditory imperception or

global aphasia, also varying degrees of receptive and executive speech delay. Many cases of severe dyslexia of traumatic or developmental origin had been rehabilitated in the Treatment Center of Moor House School for severe speech disorders, in Oxted, Surrey, England.

The constant features we recognize in these cases are as follows:

Delay in the retention of visual and auditory symbols and their association.
Difficulties of left/right orientation, letter and word sequencing, and direction finding generally.
Reversals, omissions, and substitutions in letter, word, and sentence order.
Limitation of vocabulary, poor verbal memory and recall.
Degrees of residual perceptive and conceptual difficulties, often extending to mathematics and all signs and symbols.
The need for constant repetition and strong reinforcement of visual and auditory stimuli for adequate retention.
The need for follow-up support, even after a reasonable standard of literacy has been achieved by wider and clearer explanation of meaning and concepts throughout the development of increasingly academic studies.

Although I see boys and some girls of all ages for assessment and treatment, the boys we accept at Brickwall House are usually ten to fourteen years on entry and are commonly found to be above average intelligence on the Wechsler scale for children, often with a significantly lower-than-average verbal score. We aim to take boys of I.Q. 90 and above, and we limit the number of those in the school with acquired brain damage to two or three at a given time.

The boys are all reasonably well adjusted on the surface, but are mostly discouraged, frustrated, evasive, and often clumsy and untidy. Some will "argue the toss" with every form of learning because they cannot bear to admit failure, and this problem is only resolved as real confidence is gained.

Although we are sometimes asked if it is a good idea to put so many boys with similar defects together, we hold that its great advantages are first the pupils' knowledge that others have the same difficulties, and secondly that the curriculum and atmosphere can be geared to a slower rate, thus helping the boys gain confidence and ability.

Many of the younger boys come to us unable to read above a five to six year level, not knowing the alphabet, phonic values, or numbers after several years of remedial help in junior school. Their written work is bizarre and could be termed "idiographia" at this stage, to compare with "idioglossia," the neurologist's term for the confused and often totally irrelevant utterance of those suffering from aphasia, developmental or acquired.

An increasing number of children are grant-aided by their local educa-

tion committee, but this means that their difficulties are severe enough not to have responded to peripatetic teaching, and perhaps 30 to 40 percent of the pupils might be termed truly dyslexic, in the World Federation of Neurologists' definition, at any given time. Many others show dyslexic features, and a large proportion are crossed laterals.

The very low level of vocabulary may be partly based on the lack of reading experience but may also reflect the family environment, with mothers working and children tied to a television set from which they must accept many unexplained words and concepts without an opportunity to ask for explanation. The need for the repetition of new words and for the correct imitation of stress and articulation, once given by a concerned and educating mother, goes unprovided for, nor can the teacher of large classes or the child's contemporaries provide for this need. Similarly the valuable recapping of childhood experience and interchange of ideas is equally hindered by the family habit of watching television in many homes even at meal times. When words are presented subsequently in written form, there is a further failure to connect sound and symbols.

The boys who have a history of earlier speech delay, and many who have had milder degrees of confusion of "near" words, have the "sieve" element of word learning comparable with slight receptive aphasia, i.e. "word-deafness" as it was originally termed and contrasted with "word-blindness" or dyslexia.

Incidentally, it is interesting that of late years, in spite of the usual reports of male predominance with these difficulties, our case records show an increasing number of dyslexics with a familial inheritance through the mother.

Remedial Provision

The school provides a curriculum of normal school subjects and classes are small. Dedicated teachers cope with the difficult problems of class teaching. Much oral work is done; words are presented clearly with strong association and much repetition, with drawing and actual handling of material where possible. In written composition we aim for fluency and good use of vocabulary; only three spelling corrections, by copying, sounding, covering and recall, are done at one time. Each new word or correction is noted phonetically and syllabically and spelt out, and revised three times at least. Punctuation and grammar are often taught by "patterning" with strong

reinforcement by drawing, humor, and varied repetition. Tape recorders and overhead projectors and typewriters are used to intensify figure background distinction (de Hirsch 1953). As a teaching adjunct, typed notes, in a simple shortened form, are given out for geography, history and science classes in the middle school onwards and read out slowly to the pupils, who then retain them for reference and repetition in their school file. Junior boys are often read to in small groups, sometimes following the text. We aim to widen comprehension and use of vocabulary by drama classes, plays, current affairs discussions, and direct dictionary practice.

Technical drawing, map reading, orienteering and special physical training classes aim to master the milder residual perceptual problems of these age groups, and to improve lateralization and coordination generally. Music, singing, and dancing help to gain a sense of rhythm and interpretation. Art classes train concepts of size and shape, and craft and woodwork reach a high standard and provide a wonderful outlet and training for boys of limited language ability.

Remedial mathematics is also given to small groups when necessary, using imaginative methods, and with attention to individual difficulties.

Class and school outings are regularly planned. Groups of students go to places of interest, with questionnaires to follow up these outings, coupled with drawing and discussion. Sports, swimming, and riding aid co-ordination and help to build up confidence.

Individual help is given by experienced remedial teachers for reading and spelling difficulties, creating a strong personal rapport to counteract any evasion and to build up a gradual pattern of increasing success leading to real confidence and achievement. We believe that "nothing succeeds like success," however small. With an understanding but firm regime providing security, training in ordered thinking and recall makes for the greatest possible progress. This must be in cooperation with the boy's parents.

The team work involved in the development of this special provision on an interdisciplinary basis has only been possible due to the farsighted and understanding attitude of the former Headmaster, Malcolm Ritchie, and the vital interest being taken by the present one, Stephen Lushington.

Review of 50 Boys with Delayed Reading Ability and Dyslexia

These boys were between 11–15 years of age on entry to the school.

I.Q. well above average—26 boys

I.Q. in average range—17 boys
I.Q. slightly below average—7 boys
I.Q. range 86–130 overall on Wechsler Scale for children.

Of the Boys with I.Q. above average:

Boys with a spelling age of 7–9 years (Schonell)—17
Boys with a reading age of 7–10 years (Neale)—18

On the English Picture Vocabulary Scale:

Above average—17 boys
Average—3 boys
Below average—30 boys

Number also Weak on Maths—14 boys

Boys with consultant's reports of slight neurological dysfunction—19

Other findings were:

12 were crossed laterals
42 were right-handed but 26 had tendencies to use the opposite side
8 were left-handed, with tendencies to use the right
6 did not know left from right, with marked directional difficulties
10 had residual, minor speech defects
12 had reports of earlier language delay
26 were considered true dyslexics, while others showed dyslexic features

Progress

Most boys learned to read fairly adequately in up to two years, but progress in spelling ability varied considerably. Consistent lateral dominance was achieved within two to three years. Most boys passed one or two statutory school-leaving examinations, often taken in amanuensis, so that the verbal content of their answers was not hampered by concentration on accurate presentation. Most boys have maintained reasonable careers.

5. Rudolf Berlin: Originator of the Term Dyslexia

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Most people know that America was given her name in honor of the Italian explorer Amerigo Vespucci, but few may know that the word was first used by the German cartographer Martin Waltzenmueller when making a new globe in Strassburg. In the same way, many professional workers are familiar with the term dyslexia but may not know that it was coined by Professor Dr. Rudolf Berlin. They may have read that it is a combination of the Greek "dys-," meaning faulty or impaired, and "lexis" meaning speech, from the Greek "legein," to speak (Merriam-Webster, 1934 edition). Several authors on dyslexia, among them Rawson (1968), Thompson (1966) and Wagner (1971) have mentioned the etymology of dyslexia. Critchley (1970, p. 2) mentions that "The word 'dyslexia' was first suggested by Professor Berlin in Stuttgart in 1887 in his monograph *Eine besondere Art der Wortblindheit (Dyslexie)*." While this writer is impressed with the current experimental research regarding dyslexia in children and adults, he could not help indulging in a side-excursion of historical research so that due tribute can be paid to the man, Rudolf Berlin, who named the ship even though he never became her captain.

Bibliographical Background[1]

Brief biographical entries on Professor Dr. Rudolf Berlin were found in four different sources, all written in German and published in Germany (*Allgemeine deutsche Biographie* 1902; Bettelheim 1898; Wilhelmi 1901; and *Handbuch der gesamten Augenheilkunde* 1918). Rudolf Berlin was born on May 2, 1833, in Friedland in Mecklenburg, now part of East Germany. He studied medicine at Göttingen, Würzburg, Erlangen, and Berlin; and

[1] Gratitude is expressed here to Gertrud Kuhn, Chief Librarian, Institut für Auslandsbeziehungen, Stuttgart, Germany, for providing copies of the four biographical entries on which this information is based.

combined a gay student life with diligent work on his medical studies. In 1858 he received the M.D. degree in Erlangen, and submitted an original thesis on structural principles of the convolutions in the brain. He then went on to Wiesbaden where he received his practical training as an ophthalmologist at the Eye Institute (Augenklinik) which was privately owned by Alexander Pagenstecher. After completing this training he remained for some time at the Surgical University Clinic (Chirurgische Universitäts-Klinik),

Dr. Rudolf Berlin, German ophthalmologist who coined the term "dyslexia" in 1887. (*Re-touched photo; artwork by Marney Wagner.*)

under the supervision of Victor v. Braun, and then moved to Stuttgart to open a private practice and eye clinic.

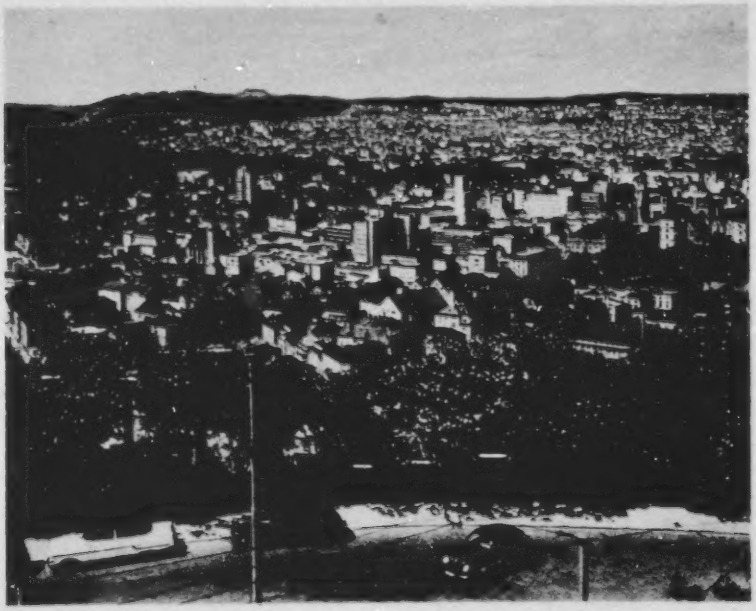
In Stuttgart, Berlin also began to teach and in 1875 he was awarded the title of Professor at the Veterinary Institute (Thierärztliche Hochschule) where he lectured on comparative ophthalmology. In 1890 he went to Rostock to become director of the Eye Clinic there. He was happy there since Rostock was located in his homeland and he had never tried to suppress the accent of this region in his speech. Suffering from arthritis for years, Berlin died on September 12, 1897, at the age of 64. The place of burial seems something of a puzzle; the four different sources give three different places: Linthal, Switzerland (Handbuch der gesamten Augenheilkunde); Stachelberg, a spa (Wilhelmi); and Rostock (Allgemeine deutsche Biagraphie, and Biographisches Jahrbuch und Deutscher Nekrolog).

Berlin made numerous contributions to medical research, among them studies on depth perception in animals, removal of objects in the eye, and left-handed writing behavior. He was also a co-founder of the *Journal of Comparative Ophthalmology* (Zeitschrift für vergleichende Augenheilkunde). He will best be remembered by the non-medical professions for his coinage of the word dyslexia (*Dyslexie*), the symptoms of which he observed in connection with treating some of his private patients who complained, among other things, about headaches and difficulty with reading the printed word.

A Special Kind of Wordblindness (Dyslexia)

In the first few paragraphs of Berlin's monograph on dyslexia he tries to justify the coinage of the term when he states that the condition actually belongs to the group of aphasias in a general sense and is also closely related to Kussmaul's *Wortblindheit* (wordblindness) from which it is to be distinguished probably only in degree rather than kind. The term implies that the condition or symptom has as its characteristic a difficulty with reading, and at the same time it intends to express the cause of the disturbance in the same way as is implied in the terms alexia and paralexia, namely a physical disease of the brain. Berlin justifies his choice of term as being in line with usage in the international medical literature. He quickly points out to the reader that if someone else could find a more suitable term which might be more satisfactory from a philological standpoint, he would gladly agree to the term.

Before Berlin discusses his theoretical views he first presents the reader with several case histories. "Herr B.," his first patient, was 66 years old and a civil servant. His complaints to Dr. Berlin included that he had difficulty with reading and that he therefore suffered setbacks in his work. When given a reading test, "Herr B." was able to read the first few words, then stopped and complained that he could not go on with reading. Physical examination revealed that vision was quite normal. The letters of the words he had read did not appear blurred; he simply could not go on reading and placed the book aside with some obvious disgust. Berlin noted that his patient was able to read the first few words without error and rather quickly. Ophthalmological examination did not reveal any pathology of the eyes. Berlin did not meet this patient again in later years, but he was told by a colleague that he had died of apoplexy after showing various cerebral symptoms. Berlin goes on to cite several more cases of what he now called *Dyslexie*. In each case he suspected a physical change in the brain as the cause of the condition but he had no idea of the specific anatomical nature of the change.



Stuttgart—Birthplace of the word "dyslexia." (*Ludwig Windstosser photo. Courtesy German Tourist Information Office, New York.*)

Berlin attempted to analyze his data based on the six case histories which he had collected over a 23-year period. He realized that his data were nomothetic and cross-sectional as he had been unable to follow his patients during the entire duration of their lives. He noted that all of these patients had the same manner of reading: they were able to read three to five words of middle-sized print. These few words were read correctly and never did they twist or scramble them in any way. Their reading halted abruptly after three to five words, read aloud or silently. The patients' speech in each case was fully intact. After ceasing to read they had feelings of discomfort but were unable to describe them. Eye diseases were only accidental when related to reading ability, never primary. Berlin assumed a brain dysfunction as the basis of the dyslexia and parenthetically remarked that he had seen similar symptoms in chronic alcoholics, in people following injections of large doses of salicylate, and in people with febrile diseases. For these cases he suggested the term "toxic dyslexia." His dyslexics had other symptoms besides a reading difficulty, mostly symptoms displayed on the right side of the body, which made Berlin speculate as to the specific location of the brain damage, namely suspected localizations in the left hemisphere. He saw dyslexia as a lesser degree of wordblindness, within the broader scope of aphasias. To him it was an "incomplete, isolated wordblindness." He stated categorically on the basis of postmortem dissections done on his patients brains that in all six cases which were examined, anatomical lesions were found in the left hemisphere of the brain. He tried also to prognosticate for future research efforts that an individual reading center eventually would be found in the human brain. From a diagnostic standpoint Berlin views his dyslexia as occurring at the beginning of the brain disease, frequently as the initial symptom of a brain lesion. Dyslexia was the initial symptom of each of his patients who eventually died of a brain disease. In contrast to Berlin's findings, Kussmaul's patients read short monosyllabic or dissyllabic words and word fractions, thus showing recovery stages of alexia and not primary dyslexia.

Discussion

As can be seen, Berlin apparently was dealing basically with a neurological condition accompanied by a reading problem. Specifically, the patient was able to read, but only a few words initially, before he stopped and could not go on. We must assume that these patients were at one time able to read, i.e., that they had successfully acquired the reading process to some adequate degree.

Berlin's findings are not entirely incompatible with those of Samuel Orton who believed that behind the phenomena he observed in children's reading lay a basic state of ambiguous hemispheric dominance, physiological in nature, representing a faulty patterning of brain function. Orton proposed the term "strephosymbolia" for this condition. He also showed the way for remediating such conditions. Both Berlin and Orton looked at the faulty reading from a neurological standpoint, but one saw initial symptoms of a suspected brain lesion while the other saw faulty reading and believed it to be caused by the poor establishment of unilateral dominance in the brain, or a brain dysfunction.

Our more "modern" concept of dyslexia today shows that the various professional disciplines have still not found a unanimous verdict on the causative factors of faulty reading (Wagner 1971). Various theories are advanced in addition to those concerned with unilateral dominance, including minimal cerebral dysfunction, hereditary involvement, developmental lag, or emotional causation, but the behavioral symptoms are now described in a much more specific form. For instance, no one will argue that dyslexics frequently reverse letters and words, show clumsiness in many instances, have delayed maturation, and show secondary emotional reactions to their primary disability. Also, what has rarely been expressed is the fact that reading is a multivaried process which can serve as a surface symptom in various instances, in the same way that fever is a symptom of medical problems. Berlin saw the patient struggle after reading several words correctly and break off abruptly after that; Orton observed the scrambled symbols which issued from his readers' mouths when reading, and from their pens when writing, and still others may see the reversal phenomenon as a primary symptom. All of these faults and errors observed in reading are part of one overall process, namely *reading*. Thus we have room in our theorizing on dyslexia for not one but several conditions, covering a variety of symptoms like a giant umbrella under which many different people seek refuge from the rain.

Professor Dr. Rudolf Berlin who coined the term will go down in the history of dyslexia as a keen observer and a pioneer.

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DIAGNOSIS AND TREATMENT

Each of the next two papers on early identification of language learning difficulties is complete in itself, but each complements the other. Dr. Jansky, as one architect of the Screening Index, describes its development and rationale. Mrs. Tower considers some of its aspects in more detail and then gives an account of its use in a validation study. While the number of children involved at this stage is not large, the meticulous care with which the study was carried out and the specificity and clarity with which it is reported make it a model which other investigators can follow with security and profit. Further replications, cast in similar molds, will help to build up an increasingly useful body of data.

As we go to press, Mrs. Tower tells us that her own study is being extended to cover the entire Norwalk, Connecticut, school system. Over 1800 kindergarten children have been given the Jansky Predictive Reading Index in the spring of 1973, while all second grade children have taken the Gates-MacGinitie Silent Reading Test. The results of latter will establish individual school norms against which to evaluate the performance of the kindergarteners after two years of reading instruction. In nine of the eighteen schools involved, plans are under way to set up programs of structured, multisensory, preventive teaching for children identified as likely to have language learning problems. We are tempted to say that the light at the end of the tunnel is growing brighter!

—*Editor*

1. Segmentation of the Spoken Word and Reading Acquisition

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This paper was presented as part of the Symposium on Language and Perceptual Development in the Acquisition of Reading at the meeting of the Society for Research in Child Development, Philadelphia, March 1973.

The Problem

There are many possible points of departure for investigators who are interested in reading. My colleagues and I at the University of Connecticut have begun with the fact that there are children who readily acquire the capacity to speak and listen to language, but who do not learn to read it. What is required in reading a language that is not required in speaking or listening to it?

The first answer that comes to mind, of course, is that reading requires visual identification of optical shapes. Since our concern here is with reading an alphabetic script, we may well ask whether the rapid identification of letters poses a major obstacle for children learning to read. The answer is that for most children, perception of letter shapes does not appear to be a serious problem. There is considerable agreement among investigators that by the end of the first year of school, even those children who make little further progress in learning to read generally show no significant difficulty in the visual identification of letters (Doehring 1968; Kolers 1972; Liber-

Note: The work reported in this paper was done in conjunction with Donald Shankweiler of the University of Connecticut. We are both deeply indebted to Alvin M. Liberman for many helpful suggestions. In the syllable-phoneme experiment, thanks are due to Bonnie Carter for aid in data collection and to F. William Fischer for his assistance in both data collection and statistical analysis. We are grateful also to Carol Fowler for her participation in all phases of the recent research reported here on consonants and vowels. Finally, all of us are indebted to Donald Libby, principal of Andover Elementary School, Andover, Connecticut, and to the teachers and pupils in that school without whose generous cooperation the research could not have been done at all.

man, Shankweiler, Orlando, Harris, and Berti 1971; Shankweiler 1964; Vernon 1960).

Beyond identification of letters, learning to read requires mastery of a system which maps the letters to units of speech. There is no evidence, however, that children have special difficulty in grasping the principle that letters stand for sounds. Indeed, children can generally make appropriate sounds in response to single letters, but are often unable to proceed when they encounter the same letters in the context of words (Vernon 1960).

A third possible source of difficulty is that the relation in English between spelling and language is often complex and irregular. But even when the items to be read are carefully chosen so as to include only those words which map the sound in a simple, consistent way and are part of the child's active vocabulary, many children continue to have difficulties (Savin 1972).

What then are the real difficulties faced by the child in the early stages of reading acquisition? In this paper, I will explore one possible source of difficulty that has been recently proposed by us (Liberman 1971; Shankweiler and Liberman 1972) and other investigators (Elkonin 1973; Klima 1972; Mattingly 1972). It is that reading requires of the child an awareness of the structure of his language, an awareness that must be more explicit than is ever demanded in the ordinary course of listening and responding to speech. Since an alphabet is a cipher on the phonemes of a language, we should think that learning to decipher an alphabetically written word (as opposed to memorizing its visual configuration as may be done in learning so-called "sight" words) would require an ability to be quite explicit about the phonemic structure of the spoken word. For example, if the child is to map the printed word "bat," which obviously has three letters, onto the spoken word which he already has in his lexicon, he must know that the spoken word also has three segments.

We suspect that this knowledge about the structure of the spoken word is not readily available to the child. Indeed, it appears not to have been readily available to the race, for we know that an alphabetic method of writing, which rests upon an explicit phonemic analysis of the language, has been invented only once and is a comparatively recent development in the history of writing systems (Gelb 1963). Syllabaries and logographic systems of writing, on the other hand, preceded the alphabet by thousands of years and have been invented independently several times. Of more immediate relevance to us is the evidence that children with reading disabilities often

have difficulties even with spoken language when they are required to perform tasks demanding some degree of explicit segmentation of phonemic structure. These children are often reported to be deficient, for example, in rhyming, in recognizing that two different monosyllables may share the same first (or last) phonemic segment (Monroe 1932), and, according to recent research (Savin 1972), also in speaking Pig Latin, which demands a conscious shift of the initial phonemic segment to the final position in the word.

A third line of evidence suggesting that knowledge of phoneme structure is not readily available is provided by the behavior of reading disabled children as observed by teachers who have worked with them (Johnson and Myklebust 1967). Such a child will often demonstrate, as I have suggested earlier, that he can readily recover the phonemic segments in the ordinary course of speaking and listening. That is, he can respond appropriately to spoken words and to the objects to which they refer. Moreover, he can approximate the letter-to-sound correspondences. If he is asked, for example, to give the sound of the letter "b" he will say /bʌ/.[1] For the sound for the letter "a" he will say /ae/ ("short a") (though this may give him more trouble, as discussed later). For the sound of the leter "t" he will say /tʌ/. But then if he is shown the printed word "bat" and asked to read it, he may give any one of a variety of incorrect responses (which I will deal with in more detail below in a discussion of error analysis). But if he is then pressed to try to "sound it out," or otherwise to use what he knows about the letter-to-sound correspondences, he is likely to produce /bʌ/ /ae/ /tʌ/. At that point, he may be urged by the teacher to "say it faster," "put the sounds together," or, in the phrase commonly used, to "blend it." But no matter how fast he produces those sounds or how desperately he tries to put them together, he produces a nonsense word "buhatuh" containing five phonemic segments and not the word "bat," which has only three. Somehow, he cannot relate the three letters of the printed word to the three phonemic segments of the spoken word. It is as if he were not aware of the fact that the monosyllabic spoken word has three segments.

But why should it be so difficult for the child to become explicitly aware

[1] /bʌ/ is a symbol representing the sound often spelled "buh." The "natural," even inevitable, result of attempting to produce a stopped phoneme (like /b/, /t/, /g/) in isolation is to some degree syllabic. Expert teachers of "phonics" pay careful attention to minimizing the vocalic component in their own presentations and in children's responses. This is difficult for both adults and children but it is critical in the *successful* use of "phonic" approaches to decoding print. Failure to give it vigilant attention has much to do with the too common difficulty here described.

of phonemic segmentation? If, as has often been supposed, the sounds of speech bore a simple one-to-one relation to the phonemic structure just as the letters do (at least in the orthographically regular case), it would indeed be hard to see why phonemic analysis should pose special problems. That is, if there were in the word "bat" three acoustic segments, one for each of the three phonemes, then the segmentation of the word that is represented in its spelling presumably would be readily apparent.

However, as extensive research in speech perception has shown (Fant 1962; Liberman, Cooper, Shankweiler, and Studdert-Kennedy 1967; Stevens 1972), the segmentation of the acoustic signal does not correspond directly or in any easily determined way to the segmentation at the phonemic level. Moreover, this lack of correspondence does not arise because the sounds of the phonemes are merely linked together, as are the letters of the alphabet in cursive writing or as may be implied by the reading teacher who urges the child to blend "buhaguh" into a word that he knows. Instead, the phonemic segments are encoded at the acoustic level into essentially unitary sounds of approximately syllabic dimensions. In the case of "bat," for example, the initial and final consonants are folded into the medial vowel, with the result that information about successive segments is transmitted more or less simultaneously on the same parts of the sound (Liberman 1970). In exactly that sense, the syllable "bat," which has three phonemic segments, has but one acoustic segment.

This is not to say that the phonemic elements are not real, but only that the relation between them and the sound is that of a very complex code, not a simple, one-to-one substitution cipher (Liberman *et al.* 1967). To recover the phonemic segments, to sort them out from the complex code, requires a correspondingly complex decoding process. In the normal course of perceiving speech, these processes go on tacitly and automatically. To understand speech, the listener need not be any more aware of the phonemic structure than he is of the rules of syntax.

Since the acoustic unit into which the phonemic elements are encoded is of approximately syllabic dimensions, one might suppose that the number of syllables (though not necessarily the exact location of the syllable boundaries) would be more readily apprehended than the phonemes. Syllable segmentation may be easier than phoneme segmentation for another reason as well. There are peaks of acoustic energy (hence loudness) that correspond at least roughly to the vocalic nucleus of the syllable (Fletcher 1929). Thus the syllable is acoustically marked, while the phoneme is not.

If syllabic segmentation is indeed easier, we might then have an explanation for the assertion (Makita 1968) that the Japanese kana is readily mastered. The kana, one of the two Japanese writing systems, is approximately a syllabary. That is, most of the graphic symbols in the kana represent syllables rather than phonemes. There are separate symbols for *ba, be, bi, bu, ga, ge, gi, gu,* etc. Given the open syllable (CV) structure of the Japanese spoken language, the child therefore rarely needs to go below the level of the syllable in order to master the writing system. One might expect, further, that an orthography which represents each word with a different character (as is the case in Chinese ideographs or in the closely related Japanese kanji) would also not cause, in the beginning reader at least, the particular difficulties that arise in mastering the more analytic alphabetic system. Indirect evidence of the special burden imposed on the beginning reader by an alphabetic script can be found in the relative ease with which reading-disabled children learn kanji-like representations of language while being unable to break the alphabet cipher (Rozin, Poritsky, and Sotsky 1971). It is worth noting, in addition, that since the time of the ancient Greeks, methods of reading instruction have sporadically reflected the assumption on the part of educators that the phonemic structure of the language is more easily taught through the initial use of syllabic units (Mathews 1966).

Though these considerations are suggestive, there has been no direct empirical test of the assumption that young children do, in fact, find it difficult to make an explicit phonemic analysis of the spoken word and that this ability comes later and is more difficult than syllabic analysis. My colleagues and I have undertaken in a recent experiment to provide such a test. For that purpose, we asked how well children can identify the number of phonemic segments in spoken words and how this compares with their ability to deal similarly with syllables.

Procedure

The subjects were 4, 5, and 6 year olds in preschool, kindergarten, and first grade classes, respectively. They included 46 preschoolers, 49 kindergarteners, and 40 first graders. The unequal numbers arose from our plan to include all available children in the particular school at each grade level. Alphabetized class registers were used at each grade level to divide the children into the two experimental groups, one assigned to phoneme

segmentation and the other to syllable segmentation. The level of intelligence of all the subjects was roughly assessed by means of the Goodenough Draw-a-Person Test. Two-way analyses of variance performed on the Goodenough DAP scores revealed no significant differences in IQ, either across tasks or across grade levels. The mean chronological ages of the two task groups were also not significantly different. Therefore, any performance differences in the two types of segmentation can reasonably be taken to reflect differences in the difficulty of the two tasks.

The procedure was in the form of a tapping game. The child was required to repeat a word or sound spoken by the examiner and to indicate, by tapping a wooden dowel on the table, the number (from one to three) of the segments (phonemes in one group, syllables in the other) in the stimulus items. Four sets of training trials containing three items each were given to both groups. The test trials, which followed the four sets of training trials, consisted of 42 randomly assorted individual items of one, two, or three segments which were presented without prior demonstration and corrected, as needed, immediately after the child's response. Testing was continued through all 42 items or until the child reached criterion of tapping six consecutive trials correctly without demonstration. Instructions given to the two experimental groups at all three age levels were identical except that the training and test items involved phonemic segmentation in one group and syllabic segmentation in the other. All the children were tested close to the end of the school year.

Results

The results showed in many ways that the test items were more readily segmented into syllables than into phonemes. In the first place, the number of children who were able to reach criterion was markedly greater in the syllable group than in the phoneme group, whatever the grade level. At age four, none of the children could segment by phonemes, while nearly half could meet the stringent criterion with the syllables. Ability to perform phoneme segmentation successfully did not appear at all until age five, and then it was demonstrated by only 17 percent of the children. In contrast, almost half of the children at that age could segment syllabically. Even at age six, only 70 percent succeeded in phoneme segmentation, while 90 percent were successful in the syllable task.

The contrast in difficulty can also be seen in terms of the number of children who achieved criterion level in six trials, which, under the proceduces of the experiment, was the minimum number possible. For the children who worked at the syllable tasks, the percentage reaching criterion in the minimum time increased steadily over the three age levels. It was 7 percent at age four, 16 percent at age five, and 50 percent at age six. In striking contrast to this, we find that in the phoneme group, no child at any grade level attained the criterion in the minimum time. An analysis of variance which assessed the contribution of task and grade found that these main effects were highly significant, with a p level of less than .001.

We cannot judge from this experiment to what degree the measured increases in phoneme segmentation with age represent maturational changes and to what extent they may reflect the effects of instruction in reading. We would guess that the sharp increase from 17 percent at age five to 70 percent at age six in the number of children passing the phoneme task is probably due in large part to the intensive concentration on reading and readiness activities in the first grade. The possibility that these changes with age between five and six are relatively independent of instruction could be tested by a developmental study in a language community such as the Chinese, where the orthographic unit is the word and where reading instruction therefore does not demand the kind of phonemic analysis needed in an alphabetic system.

Meanwhile, we are especially concerned to know more about those substantial numbers of first graders, some 30 percent in our sample, who apparently have not acquired the ability to do phoneme segmentation. It would be of primary interest to know whether they will show deficiencies in reading acquisition as well. We are just beginning this phase of the research. In a recent pilot study, we gave the word-recognition subtest of the Wide Range Achievement Test (the WRAT) to the children who were the first graders of last June's sample. When they are ranked according to their scores on the reading test, we find that while half the children in the lowest third of the class in reading ability had failed the phoneme segmentation test last June, no child in the top third had failed it. Encouraged by these results, we have devised an analytic reading test designed to measure decoding skills more systematically than is possible with the WRAT. This is now being administered in addition to the WRAT and the phoneme task to a new group of children in Grades 1 and 2.

We have suggested that a lack of awareness of phonemic segmentation

may be one serious roadblock to reading acquisition. There are data from the analysis of children's reading errors which appear to provide additional indirect evidence for this view. It seemed to us that if a child's chief problem in reading is that he cannot make explicit the sound structure of the language, he might be expected to show success with the initial letter which requires no further analysis of the syllable and relatively poor performance beyond that point. If all he knows are the letter-to-sound correspondences and that he must proceed from left to right, he might in the case of "bat," for example, simply pronounce the sound for the first letter and then search his lexicon for a word beginning with the sound of that letter. What he needs to do, instead, is to search his lexicon for a word that has three sound segments corresponding to the letter segments in the printed word. However, if he does not know that the words in his lexicon have segments or if he finds phonemic segmentation difficult he will not be able to map the letters to the segments in those words. By this reasoning, his errors on the final consonants in words should be greater than those on the initial consonants.

Examining Initial-Final Consonant Errors

We have recently concluded an experiment designed specifically to examine the initial-final consonant error pattern. The subjects were 20 third graders drawn consecutively from the alphabetic registers of a nearby elementary school. The list of words to be read consisted of 38 monosyllables familiar to third graders and selected so as to give equal representation to the 19 consonant phonemes which can occur in both initial and final position in English words. Each phoneme was represented twice in the list in each position. The words were printed on 3 x 5 cards and presented to the child singly to be read aloud to the best of his ability. Testing was carried out in late fall.

Analysis of the data shows final consonant errors to be about twice as frequent as initial (9.5 percent of the opportunities for final consonants as compared with 4.9 percent for those in the initial position). A t-test found this difference to be highly significant, with a p value of less than .005. Since it was possible that the difference might be due to the fact that a given phoneme occurring finally may be spelled more complexly than that same phoneme in the initial position (g, j versus dge or ge), we then looked only at the errors on phonemes which are spelled simply (by a single letter) in

both initial and final position (p, t, k, b, d, g, m, n, r). If the difference had been due to orthographic complexity, it should have disappeared in this analysis. But it did not. Final consonants still produced significantly more errors (7.8 percent to 3.0 percent).

It is clear, then, from these results, that there is indeed a progression of difficulty with the position of the segment in the word, the final consonants being more frequently misread than the initial. Similar findings have been reported by us in a previous study using different word lists (Shankweiler and Liberman 1972) and by other investigators (Daniels and Diack 1956; Weber 1970) who examined error patterns in the reading of connected text. This initial-final consonant difference cannot be accounted for in terms of a simple reflection of the error pattern in speech, as we found in the earlier study of error patterns. There we presented, first for oral repetition and then for reading, a list of 204 monosyllables chosen to give equal representation to most of the consonants, consonant clusters, and vowels of English. The initial-final consonant error pattern was duplicated in reading, but in oral repetition, the consonant errors were about equally distributed between initial and final position. Moreover, the initial-final error pattern in reading is also contrary to what would be expected in terms of sequential probabilities. If the child at the early stages of beginning to read were using the constraints built into the language, he would make fewer errors at the end than at the beginning of words, not more.

Vowel Errors

Thus far we have presented several lines of evidence suggesting that the explicit analysis of phoneme segmentation is a hard and unnatural task which may be an important source of difficulty for the child learning to read. But it is certainly not the only serious barrier. The error pattern of vowels provides a case in point. It is well established (Monroe 1932; Shankweiler and Liberman 1972; Venezky 1968; Weber 1970) that vowels elicit many more errors than consonants. In the segmentation study mentioned above, for example, the vowel errors were twice as frequent as overall consonant errors (15.1 percent for the vowels as compared with 7.3 percent for the consonants). It should be noted that this is quite different from what we find in speech. The vowel errors in the oral repetition of speech are infrequent and fewer than those for consonants (Shankweiler and Liberman 1972).

Why should the error rate for reading vowels be so much higher than that for consonants? It might, of course, be simply because of the embedded medial position of the vowel in the words used to test reading. In order to check on this possibility, we devised a new test consisting of equal numbers of words containing vowels in the initial, medial, and final positions. The seven vowel phonemes that can occur in all three positions were used three times in each position. The words were again monosyllables familiar to third graders. It was found that the overall rate of vowel errors continued to be about twice that of consonant errors (28.3 to 14.0).

Vowel and Consonant Error Patterns

There are two reasons at least for suspecting that vowel errors may reflect something other than the segmentation problems which we have suggested as an explanation for the consonant pattern. First, as we have seen, the child can apparently count syllables fairly well and the vowel nucleus stands out in the spoken word as a major element that can be identified in the syllable. A second, and perhaps more interesting reason, comes from a further examination of the error pattern. In the case of consonants, we have noted that errors tend to pile up in the final position. We have taken this as indirect evidence that the child is having segmentation problems. Vowel errors, on the other hand, pattern quite differently. In the third grade study described above, there was no significant difference in error rate for vowels in the initial, medial, and final positions. Moreover, the error rate of vowels in both initial and final position continued to be significantly higher as compared with consonant errors in the corresponding positions (27.6 percent to 9.0 percent in the initial position and 30.5 percent to 19 percent in the final position).

There is clearly no position effect with the vowels; they are simply difficult in all positions. The absence of a position effect may be due to the fact that the vowel is acoustically marked by a burst of sound wherever it appears, while there is no such acoustic mark for the enfolded consonant. In any event, the vowel problem certainly cannot be entirely attributed to segmentation difficulties.

Indeed, we suspect that the errors elicited by consonants and vowels are quite different in their origins. In the case of the consonants, the child has little trouble in learning the spelling-to-sound correspondences. Ortho-

graphic complexity makes no appreciable difference to the position effect. The child's error pattern arises mainly from the fact that he cannot map the segmentation of the printed word to the segmentation of the spoken word. The extra difficulties attendant upon the vowels are probably due in part to the obvious orthographic complexities of the spelling-to-sound correspondences but partly also to the continuous and fluid nature of vowel perception (Liberman *et al.* 1967; Liberman 1970). Though it stands out wherever it occurs in speech, the vowel is complicated by the fact that it can be spelled in many ways in the writing system and is less categorically perceived than the consonants. That is, not only is there a many-to-one mapping of spelling to sound, but because of the continuous nature of vowel perception, even the sound correspondences of single vowel letters (like the letter A has the sound /ae/) may be harder to code and to maintain in memory. We have argued (Shankweiler and Liberman 1972) that as a consequence of the continuous nature of their perception, vowels tend to be somewhat indefinite as phonologic entities, as illustrated by the major part they play in the variation among dialects and the persistence of allophones within the same geographic locality. By this reasoning, it could be that the non-categorical nature of vowel perception may itself be one cause of the complex orthography and at least one reason why multiple representations of the vowels are tolerated.

Orthographic Complexity

The investigation of the effect of orthographic complexity is beset with many problems. To cite only one example: If orthographic complexity is an important source of errors, the number of possible orthographic representations of a given sound should be correlated with the number of errors made on that sound. In fact, however, in a group of second graders we studied recently, the correlation between orthographic complexity and the number of errors lacked statistical significance. Qualitative analysis of the data suggest that this might be due not to the unimportance of orthographic complexity, but rather to the fact that the second grader's knowledge of orthographic rules is so slight that the number of orthographic representations is not yet a relevant factor in determining his errors. We have since developed a cloze-procedure test to measure knowledge of orthographic rules against which to check our findings, but these data are not yet completed.

Though we believe it to be of interest to examine the relation of orthographic complexity of the vowels to the problems of reading acquisition, we recognize that the vowel may be less important in the process than would first appear. It could be argued that if the child's segmentation problems were corrected, his difficulties with the vowels would not be such a serious barrier to reading acquisition. The consonants carry most of the information load. Provided the child knew how many there were and their sequence in the spoken word, an incorrect rendition of the vowel sound would be fairly easily corrected in the context. Surely, getting the vowel correct without a proper analysis of the phonemic structural sequence of the word would be of less benefit to him. If this is so, early teaching methods which emphasize the intensive teaching of the phonemic structure of the word before the introduction of letter forms should be considered. A Russian psychologist (Elkonin 1973) has recently presented considerable experimental evidence that such a method is indeed highly successful.

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2. Early Prediction of Reading Problems

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In discussing approaches to prediction today the focus is the kindergarten-age child. The procedures to be described are the products of two longitudinal research investigations[1] and years of clinical experience with the evaluation and treatment of children with language disabilities. Both a research and a clinical orientation are reflected in the predictive procedures to be discussed. The point of view owes much to the long standing association with Katrina de Hirsch, whose first paper on the subject was written in the early nineteen fifties.

Help comes to most children too late. When they appear for remediation only after they are seven or eight we have to cut corners therapeutically. An inordinate amount of time is spent helping children to meet immediate academic demands. There is far too little time to establish the fundamentals; to help students to set themselves up at the verbal level; there is too little time to work on vocabulary and to formulate and understand ideas. Short shrift in this respect interferes at the very least with the ability to cope with even minimally literary English. Many of these children can learn to read after a fashion, but most of them don't *like* to read and the reason may well be that they cannot cope with the semantic and syntactic level of much of what is written.

Prediction: A Multifaceted Problem

Prediction involves the manipulation of highly complex sets of variables. The reading process, the performance to be predicted, is one of them. Others

[1] The first of these is discussed in detail in *Predicting Reading Failure*, by de Hirsch, Jansky, and Langford (Harper and Row 1966). The second is described in *Preventing Reading Failure*, by Jansky and de Hirsch (Harper and Row 1972).

are problems in measurement of five-year olds' abilities, the kinds of assessment procedures that are appropriate, and consideration of all that can happen between prediction and outcome.

Reading

What *is* reading? With Orton, de Hirsch, and more recently, Brown, Goodman, and others, reading is seen here as a linguistic competence, fed by the perceptual systems. It is dependent on an intact neurological base that is mature enough to relegate potentially disturbing internal and external stimuli to the background. It requires the level of emotional maturity that permits the postponement of immediate gratification of long term gains, and it necessitates enough freedom from neurotic conflict to permit investment of energy in the task at hand, rather than in the maintenance of defenses against anxiety. Finally, reading requires a sociocultural value system that esteems reading as a competence basic to survival. Clearly, reading is one of the more complex cognitive processes, and one that requires a delicate balance among relevant aspects of the support system.

While life is enriched by the pleasure and increment in knowledge that accrue from reading, the act of reading is not an end in itself. Reading is a tool that is most useful when it becomes completely automatic, when it drops from our awareness. And once it has become automatic, we usually forget how we mastered it; most of us do not remember the process of learning to read; our transition from spoken to printed language systems was effected smoothly. In most cases the main contribution of the teacher was to draw attention to correspondences between spoken and printed language systems. Whether this was accomplished through the teaching of phonics, or by memorization of whole words or sentences probably doesn't matter in the case of most children.

Mrs. de Hirsch, in a paper published in 1954, contended that the ability to experience and to respond in terms of *Gestalten* is one of the basic conditions for the successful handling of language phenomena. Interestingly enough, the view of reading as an autonomous, more or less self-contained process is supported by some research data. Children's scores on a very heterogeneous assortment of tests—some administered at kindergarten age and others, including a number of measures of reading ability administered at second grade level—were factor analyzed. The factor analysis showed that

the various tests fell into eight discrete groupings, each consisting of closely related tests. While most of the factors included a conglomerate of kindergarten and second grade level tests, one factor was heavily loaded with second grade activities, all of which involved reading. This rather exclusive clinging together of reading measures seems to characterize reading as an activity apart, and not as a phenomenon that is made up of a hierarchy of subfunctions (Jansky 1970).

Other phenomena are provocative as well. In prediction research we are invariably confronted with correlation coefficients that represent only a third or at best half of the correspondence between tests administered at prereading levels and reading itself. And this is true no matter which prereading activities are tested for their relationship to reading. What about all the variance that is *not* accounted for? While much of it doubtless is related to the effects of intervening events and errors in measurement, it is also possible that there exists no unbroken continuum that leads directly into reading and that because reading is a "new" competence, tests administered earlier that tap somewhat different skills cannot possibly capture all of its essence.

Clinical experience points in the same direction. The separateness of reading from other competences is perhaps most dramatically illustrated in children who have originally had very severe difficulties. I have observed repeatedly that there comes a point when the youngster simply takes off. This may be what Eric Brown (1970) means by the expression "semantic breakthrough." The autonomy of their new way of reading contrasts sharply with earlier efforts so notable for their painful laboriousness. This is not to say that such children do not continue to need help—only that they have finally begun what I regard as real reading. Goodman's comments (1972) also seem pertinent here. Progress in reading is not a matter of mastery of parts leading to mastery of the whole but rather a matter of successive approximations to proficient reading. Children increase their control over the whole process, mastering details only after the whole has moved forward.

This view of reading has implications for prediction and diagnosis. For one thing, it suggests that if reading is not directly and linearly continuous with previously established competencies, then prediction based solely on coefficients of correlation with various kindergarten tests is likely to be too chancy to be practical. Dykstra (1967) has observed that it is naïve to expect any battery of predictive tests to capture enough of the way an individual child will eventually read to be totally unassailable for individual forecasting.

The Child

Although we have no right to do so, let us assume that a given five-year-old has produced a typical test performance, one that really represents his functioning in the areas tested at the time. He has performed absolutely typically for himself on a test shown repeatedly to be highly correlated with later reading mastery. The fact is, we cannot guarantee that his development will proceed along the predicted course, that his emotional climate will continue as it is (whether favorable or unfavorable, or both), or that he will continue in the same school with the teaching methods known at the time of prediction, or that school attendance level will be the same. Sole reliance on tests clearly represents a failure to face up to uncontrollable variables.

Requirements for Prediction

The aim of prediction is very practical: to identify children who are headed for trouble so as to do as much as possible to avert it. If intervention is to be effective, predictive procedures should be undertaken for all children. That is not as impractical as it may sound. Widescale prediction is possible if the battery used is short enough. Brevity, thus, is a prime requisite of a predictive battery if prediction is to be undertaken for everyone.

An even more important requirement, of course, is accuracy. If we are serious about attempting to reduce the incidence of reading failure, we want to intervene with all children, and only with the children, who are at risk. Therefore, individual testing is crucial if we are to approach even a minimal level of reliability in this relatively young age-range. Further, it is absolutely essential to establish that the tests to be used are closely related to reading. A high multiple correlation coefficient is not enough for prediction, however. In constructing tests one has to go farther. A decision must be made as to where, along the range of predictive battery scores, to set the cutting point that will distinguish between the subsequently passing and failing readers. The multiple correlation coefficient does not indicate where that is. The decision is usually based on the performance of the group used in the development of the tests. However, using the test sample as a base is questionable because it is inevitable that some of the children with whom the tests are actually to be used will differ from the normative group in various characteristics—in average IQ, socioeconomic status, geographic environment, and so forth.

The task in the study reported here was to try to develop a plan for prediction that somehow circumvented the norms problem. Norms are clearly necessary, but the question is always how to adapt existing standards to a specific setting.

We have no chance for predictive accuracy unless we look beyond our tests. Because of the inherent complexities of the maturational process and the vicissitudes of children's lives, prediction requires more than manipulation of test scores. It demands the flexible sifting and weighing of data concerning many aspects of the child's functioning in the framework of the demands of a given academic setting. This is basically a matter of human judgment. Information obtained from a single source will not suffice. Evaluation can be reduced neither to the "hard" data of psychometricians, nor to impressionistic judgments made by teachers. The problem demands the exploration of all possible avenues of information. Integration of objective and subjective data should result in a far more differentiated predictive evaluation than one more narrowly based.

Background

The research reported here was, in part, an outgrowth of a pilot study directed by Mrs. de Hirsch (1966). The early study investigated 53 children to whom were administered a battery of 37 tests in the spring of the kindergarten year and a number of reading and spelling tests two years later, as the children were finishing second grade. The outcome was a battery of 10 kindergarten tests which we called the Predictive Index. This Index identified 10 of the 11 children who proved to be failing readers. We promised at completion of the study to replicate the procedures with a large group of children to see how effective the Predictive Index would be with an entirely new sample.

As responses came back from users of the early Predictive Index, we became aware of the need for a much shorter battery, one that could be administered to large numbers of children and one that could be handled by paraprofessionals. It was decided, therefore, that reassessment of the old Index would be secondary to the major goal of developing a new, short predictive battery, a Screening Index.[1]

[1] Results of the follow-up investigation of the early Predictive Index are discussed in detail in *Preventing Reading Failure*. Jansky and de Hirsch, 1972, in Appendix A, pp. 137–142. (See also the paper by Tower, which follows.—*Editor.*)

Sample

A word first about the very heterogeneous group that was the sample of the second investigation.

The children were drawn from public schools in two districts in New York City. The kindergarten tests were administered to all children who spoke and understood conversational English. This procedure yielded a total of 508 subjects. Of the 508, we managed to follow 401 through the second grade.

The children came from families of Puerto Rican, Italian, Irish, Polish, and Jewish descents. More than half the children were white and 42 percent were black. The group included 217 boys and 184 girls. Socioeconomic ratings revealed trends in the expected direction: The average SES for whites was nearly a standard deviation higher than that for blacks and Puerto Ricans. WISC Similarities subtests were administered to about one-third of the group and these youngsters tended to receive higher than average scores on the Similarities subtest.

Four of the nine examiners participating in the testing were non-professionals. All tests were administered individually. The kindergarten tests were administered to the children at their schools in March, April, and May of their kindergarten year. Reading and spelling evaluations were undertaken in the spring of the second grade.

Tests

The predictive screening battery administered to the children as five-year-olds was drawn from a pool of tests which were considered to be potential predictors. The heavy emphasis on linguistic tests derived from the conviction that ability to comprehend and use oral language is of overwhelming importance in learning to read.

The kindergarten tests administered were:

1. Pencil Use
2. Name Writing
3. Bender Motor Gestalt Test
4. Minnesota Perceptu Diagnostic Test
5. Tapped Patterns
6. Sentence Memory (Forms L and M of the 1937 Stanford-Binet Intelligence Scale)
7. Wepman Auditory Discrimination Test

8. Boston Speech Sound Discrimination Test
9. Roswell-Chall Auditory Blending Test
10. Oral Language Level
11. Number of Words Used in Telling a Story
12. Category Names
13. Picture Naming
14. Letter Naming
15. Horst Nonsense Word Matching Test
16. Word Matching Subtest of the 1937 Gates Reading Readiness Test
17. Matching by Configuration (based on Gates)
18. Recognition of Words Previously Taught ("boy" and "train")
19. Spelling Two Words Previously Taught

At the second grade level a very comprehensive battery of tests was administered, but the only ones pertinent to the present discussion are the achievement tests: The Gray Oral Reading Test, the Gates Advanced Primary or the Gates MacGinitie B (comprehension section), and the Metropolitan Spelling Test. As indicated at the outset, the major criterion measure was the comprehension test score.

Data Analysis

In analyzing the data, the kindergarten battery and second grade reading test scores were used as the basis for developing a best predicting equation. This equation was developed by means of stepwise multiple regression techniques. In the predictive equation evolved, each of the predictive tests selected is weighted according to its relative contribution to reading. These weights are built into scoring procedures so that the tests with the highest correlation coefficients are given the most weight in calculation of the total battery score.

We decided that judgment of the effectiveness of the screening test for the study sample would be determined as in the past. The point in predicted scores that best separated poor from good readers in the study sample would be determined and the proportion of predictive hits and misses would be calculated.

The value of having a large sample is that it permits subdivision. We wanted to see whether the screening test would predict equally well for children of each sex, who differed in age, race, intelligence and socioeconomic status.

Failure in reading was defined as a grade score of 2.2 or lower on the paragraph reading test.

Findings

What sort of screening index was developed? As it happened, we went through a number of steps before getting a battery that would be suitable for most groups. It was fortunate that we did the subgroup analysis, for we learned that the first battery yielded by the regression analysis was just fine for everyone but the white girls.

To refine prediction, it was decided to repeat the regression analysis separately for the white girls and for everyone else. This procedure yielded two different batteries, one that was quite effective for the white girls, and another that was equally effective for everyone else. Even so, the idea of offering two separate batteries was eventually rejected as too cumbersome. Preparing a separate battery for white girls seemed unwarranted in view of the very few failing readers in this group (in the study, about 14 girls in the group of 84 who failed).

A decision was made, therefore, to retain and to use for all children, the Index developed originally for everyone but the white girls, because it was the larger group that contributed most of the failing readers. Nothing is really lost for the white girls—the only effect is that the Index picks up as possible failures a somewhat higher proportion of those who will actually be successful—of False Positives, in other words.

The best predicting tests in the Screening Battery, in order, were Letter Naming, Picture Naming, Gates Word Matching, Bender Motor Gestalt, and Binet Sentence Memory.

The multiple correlation coefficient between these tests and end-of-second-grade silent paragraph reading achievement was .66. For the group as a whole, this battery identified 77 percent of the children who failed in reading at the end of second grade. When the figures are categorized according to race and sex, we found that the screening index identified 83 percent of the white boys, 77 percent of the black girls, 76 percent of the black boys, and 79 percent of the white girls who later failed. The battery picked up as high risks an additional one in four or five children who subsequently performed at grade level on silent reading tests.

Discussion

Three of the best predicting tests—Letter Naming, Word Matching, and the Bender—have come up as good predictors in nearly every predictive study ever done and it is hardly surprising that they did so in our study.

The Binet Sentence Memory items have not been used in other predictive batteries as far as I know. It is probably safe to say that this test reflects the child's ability to store and to recall syntactic structures. It is possible that the ability to repeat complex sentences is related to their length and complexity. The grammatical constructions to be repeated by the child reflect essentially adult grammar, and his success is one measure of his ability to cope with adult grammatical units. This is similar to the task he faces in reading a primer—he has to deal with a grammar that is not really his own.

The other predictor, a very powerful one, is the Picture Naming Test. This test was nearly as good a predictor as Letter Naming. The Picture Naming Test, though new, proved to be highly reliable; the Kuder Richardson r is .86. Reading, like picture naming, requires elicitation of spoken equivalents. Years of experience in the practice of remedial reading have convinced me of the overwhelming importance of the ability to retrieve stored verbal symbols. The poor reader frequently gropes miserably for the words represented by the printed verbal symbols he sees on the page before him. We are all familiar with his uncertain memory for words he had supposedly learned to read. (Children with naming difficulties, incidentally, have just as much trouble learning letter equivalents as they have learning whole words.)

Thus it would appear that the individual predictive tests "make sense" in terms of their contribution to later reading. There is no reason to doubt that the close relationship between these tests and reading will continue.

I felt the study had achieved its major aim: the development of a screening battery that can be administered to large populations. The size and heterogeneity of the current sample have permitted an investigation of the performance of subgroups. Differences between subgroups are reflected in the scoring. Therefore, the battery can be used with some confidence with different groups of children. Administration time is short—fifteen to twenty minutes. It was demonstrated that adequately supervised paraprofessionals can satisfactorily administer the tests. The practicality of large scale predictive screening for individual children has been questioned. The present research has shown that testing of large numbers of children is quite feasible. What

remains is to present a plan for using the screening batteries as part of a more comprehensive attack on prediction.

The Plan for Prediction

No matter how good the predictive battery, it will not identify every single failing reader and it will, moreover, pick up some children who will eventually pass. St. John (1971) has pointed to the need to use the anthropologist's observational tools and to depend less on "objective" or quantifiable indices. We need to broaden our basis for prediction by including teachers' judgments and by taking into account the characteristics and expectations of the particular schools the children attend. Experienced kindergarten teachers' estimates of their children's future performance is excellent. Teachers are familiar with their pupils and they know the expectations of their particular schools. A combination of such subjective information with objective data will necessarily enhance the accuracy of prediction.

The proposed plan for prediction, then, uses test battery scores in conjunction with teachers' predictions; it provides for the adaptation of norms or cutting points to the academic expectations of a given school.

A detailed description of the way objective and subjective scores can be combined is described in *Preventing Reading Failure* (Jansky and de Hirsch 1972). Roughly, the process involves the comparison of ranked Screening Index scores, on the basis of test administration by someone other than the kindergarten teacher, with the teacher's ranking of the children in her group according to her estimate of their chances of succeeding in reading two years later.

In ranking the children, the teacher takes into account, with varying degrees of conscious specificity, her estimate of the parents' attitudes toward education, the child's attendance record, his ability to work at a table for relatively long periods, his capacity for independent work, his persistence despite frustrations, his ability to listen for long periods, his use of oral language, his interest in reading, and his desire to master it, and the question, What is reading? The teacher should be encouraged to rely on her intuition even though she may not be quite sure why she feels as she does. The kinds of academic demands that will be made on the children during their first two years of school is another factor she should consider.

There exist, then, two rankings: the teacher's, based on her impressionistic judgments, and the scores of the Screening Index.

We are interested, of course, in the children at the bottom of each list. What is the bottom? In one school the bottom might represent a third or a half of the total group, while in another it might be as little as one-tenth of the total. Obviously it would be foolish to use the same cut-off point for academic settings that are so divergent. The method suggested for determining what constitutes the bottom of the group for any particular school is based on the assumption that the proportion of high risk kindergarten children in that school is about the same as the proportion of failing readers at the end of second grade—again, failing readers by that school's standard. This procedure should correct for variations among schools in academic expectations.

The high risk group, at this point, has been identified on each of the two rankings of kindergarten children. On one ranking, the risk group has been defined on the basis of the subjective judgment of the kindergarten teacher. On the second, which consists of the listing of screening index scores, the risk group is based on the school's own definition of the extent of its reading failure.

The final step is to compare the two lists and to settle on a final high risk group. It is likely that the same children will fall into the risk category on both lists. There will be discrepancies, however. In these cases, a conference between teacher and tester will often resolve the question whether or not the child really belongs among the potentially failing readers. When examiner and teacher do not agree, the child is referred for diagnostic testing, which should provide enough information for a final decision.

The predictive screening battery and the procedures suggested for its use, would appear to be promising from several points of view.

First, the predictive plan may result in more individualized prediction. Instead of comparing children against a fixed norm, the procedures recommend a sliding cut-off point, based on the characteristics of the child's school. Combining subjective with objective data for each child gives a far more rounded picture of his functioning than would use of either alone.

Secondly, the procedures described may be adapted to a wide variety of situations. The Index itself is suitable for children from various socio-economic backgrounds with IQs ranging from low to high.

Finally, the screening battery and procedures for its use raise no administrative or financial barriers to the individual testing of large numbers of children. The tests require only fifteen or twenty minutes to administer and short sessions will suffice to train paraprofessionals and teachers.

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3. A Kindergarten Screening Index to Predict Reading Failure

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The Report of the Secretary's (HEW) National Advisory Committee on Dyslexia and Related Reading Disorders (*Reading Disorders in the United States*) has publicized the uncomfortable fact that, "within the existing educational system across the nation, an estimated 15 percent of otherwise able students experience difficulty in learning to read. This difficulty is of sufficient severity to impair seriously the overall learning experience of these students and their ultimate usefulness and adaptability to a modern society . . . [This] failure to learn to read ranks among the most serious educational problems confronting the nation." In spite of other available media for communication, "reading, the crux of most learning, is indispensable in the modern era, which depends on written communication for both personal and national survival" (Roswell and Natchez 1964). James E. Allen, former United States Commissioner of Education, in his address at the Orton Society Conference in 1971 (Allen 1971), forcefully stated that "The school must accept the responsibility for the teaching of reading for each individual child. . . . Both prevention and cure must be provided for. . . . In other words, help for identification, prevention, and cure of reading deficiencies should be available whenever and wherever it is needed. No child should be denied his 'right to read' because of location or of social or economic status."

This implies a massive intervention program for all children, both those who are culturally and/or economically deprived and those middle-class children "who present deficits in areas related not only to the manipulation of numerical and verbal symbols, but to learning in general" (de Hirsch 1971). But the time and age at which intervention should take place in the education of a child seems of paramount importance. A report by Schiffman (1964) based on a review of 10,000 cases indicated that when children are identified as learning disabled in the second grade, 82 percent of them

could be brought back to grade level in two years by teaching methods appropriate to their disabilities. But if identification is not made until after the fourth grade, only 15 percent could be readily remediated. He urged (1962) that "Emphasis . . . be placed upon early identification, and placement in the proper program, before an individual's problem has become too complex." The *Report on Reading Disorders* (1969), in the summary of its findings, strongly recommended that "although we cannot neglect remedial reading programs for those who have failed, the foremost concern of a national [reading] program should be the prevention of reading failure."

De Hirsch, Jansky, and Langford (1966) for many years have been concerned with the early identification of potential reading failures. In 1965 they developed an Index of ten tests which attempted to establish diagnostic criteria for those children in danger of failing when exposed to formal education, and "to determine whether a distinct and identifiable pattern of perceptuomotor and oral language deficits at preschool age is *predictive* of difficulties with visual language—with reading, writing, and spelling—in subsequent years." Using this Index with an experimental population of 53 children of kindergarten age, they were able to identify correctly ten (91 percent) of the eleven children who failed the reading and/or spelling tests at the end of second grade. In contrast to most readiness tests which simply determine where a child's score lies with respect to the normative group, the pilot study used the kindergarten test findings to make projections as to each child's future performance.

In the spring of 1966 a follow-up study of the Predictive Index (see Jansky 1969, 1970) was made on a heterogeneous sample of 508 kindergarten children from five public schools in two districts in New York City. Two years later, in 1968, second-grade tests were administered to the 401 children readily available of those to whom the Predictive Index had been given in kindergarten. The major goal of the follow-up study was to test the validity of the 1965 Predictive Index. The research design also provided for the simultaneous modification of the Index, in the expectation that the Index might have to be revised and shortened in order to be applicable to large heterogeneous groups of children. At the end of the follow-up study, two modified short screening Indexes were developed by selecting those tests in the Predictive Index that were the best predictors of subsequent reading success. Index A was for use with black boys and girls, Puerto Rican boys

and girls, and white boys. Index B was for use with white girls.* These Screening Indexes were successful in identifying 73 to 83 percent of the failing readers. The size and heterogeneity of the sample permitted an investigation of the performance of subgroups, and differences between subgroups were reflected in the conversion of raw scores. A converted score of 50 was used as the cutting point that separated the potentially passing from the potentially failing reader, it being that point in the continuum of predictive scores that resulted in the most efficient prediction. Failure was defined as a grade score of 2.2 or lower on the second grade silent reading test.

To validate further the Screening Indexes, Dr. Jansky gave permission to use them with the kindergarten population in one public school of a small city near New York City. This school encompassed a broader socio-economic spectrum than the population sample used in 1966, inasmuch as its population ranged from the children of upper-middle class Professional and Managerial parents to bussed-in children from the low-income federal housing project on the other side of the city. The results of the Indexes were also to be used as one of several criteria for the selection of those children who would need more readiness tasks before entering first grade, and who would be placed, with parents' consent, in a small "Extended Readiness" (XR) class in the Fall of 1970.

Method

Subjects

The entire kindergarten of 79 children in one public elementary school in Norwalk, Connecticut, was given either Index A (for black boys, black girls, and white boys) or Index B (for white girls) in the Spring of 1970. The subjects were a heterogeneous population both as to social class and racial background. Sixty-nine of the 79 were administered a silent reading test in the Spring of 1972. (Ten children were "lost"; they had moved

* Index A predicted adequately for all the subgroups except for the group of white girls. It was not possible to achieve a really satisfactory ratio of True to False Positives for them. Therefore the stepwise multiple regression analysis was repeated, and Index B resulted in a more precise prediction for the white girls. It was later felt that the offering of two batteries was cumbersome and unwarranted in view of the very few failing readers among the white girls.

away or had gone to private schools, and comparable reading test results were not available for them.)

The age range of the 69 subjects, in June of 1970, was from 5 years, 6 months to 7 years, 1 month. Three boys and one girl were repeating kindergarten; another three boys and one girl had been in the preschool hard-of-hearing program in the same school for the 1968–69 school year.

Fifty-six or 81 percent, of the subjects were white; 13, or 19 percent, were black. There were 36 girls and 33 boys. Twenty-nine of the girls were white, and 7 were black; 27 of the boys were white, and 6 were black.

By the Spring of 1972, 58 of the subjects had been in the same school since kindergarten; five had moved to other public schools in Norwalk; two had moved to public schools elsewhere within the State; three had gone to parochial schools; and one had returned from an unsuccessful first-grade year in a parochial school. Fifty-one of the subjects were in second grade; one boy was in a small special class for emotionally and neurologically impaired children; 17 children were in first grade. (Eleven of the 17 had been in the Extended Readiness class in 1970–71, one had repeated kindergarten, and five were repeating first grade.) All but one of the hard-of-hearing children were in first grade.

The composition of the subjects was broad in both ethnic and socio-economic background. Besides the black children, there were children from Polish, Irish, Italian, Jewish, French, Hungarian, and English backgrounds. One child's mother was Japanese. Twenty-eight of the children lived in a deteriorating moderate-income housing project; one child lived in a trailer court; four black children lived in the low-income housing project across the city, and were bussed in with three black children and one white child from another poverty area in the city in accordance with the school system's policy of racial balancing. The four hard-of-hearing children came from outside the school district: three were from other Norwalk school districts, and one came from a neighboring town.

Subject characteristics in terms of sex, race, age, socio-economic status, and intelligence (from individually administered intelligence tests: Slosson, Wechsler Intelligence Scale for Children, Stanford-Binet, or Peabody Picture Vocabulary Test) are shown in Table 1.

Originally it had been planned to administer the Slosson Intelligence Test to each child at the same time as the Screening Index was administered. Seven of these were given before the plan had to be dropped for lack of time. However, over the next two years, eleven other children in this sample

were given individual diagnostic examinations, including an intelligence test, because they were having academic problems. A summary of the intellectual ability of the eighteen subjects appears in Table 1.

The socio-economic rating system based on parental occupation, educational attainment, and total family income is presented in Table 2. The average socio-economic status for whites was nearly a standard deviation higher than that for blacks.

A comparison of this sample population with the percentages of employed and unemployed workers for the year these children entered kindergarten, shows that the sample was fairly representative of the United States as a whole (Table 3).

PROCEDURE

1. During kindergarten registration in May, 1969, in preparation for the entry of the children into kindergarten the Fall of 1969, 54 parents filled out a questionnaire which incorporated McLeod's "School Entrance Check List" (McLeod 1968). Because this was the first year such a questionnaire had been used, all the Headstart and late registrants were missed. The check lists were scored according to McLeod's scoring instructions (1969). Three categories were devised: "High Risk" (more than seven significant responses); "Risk" (six or seven significant responses); and

TABLE 1. SUBJECT CHARACTERISTICS

Race and Sex	*Kindergarten Age by 6/70 (in months) (range: 66–86)*			*Intelligence (range: 70–110)*			*SES Index (range: 3–12)*		
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*
White									
Males	27	72.8	4.49	6	92.2	13.93	27	6.7	3.16
Females	29	72.2	3.20	6	93.3	13.32	29	6.7	3.87
Total White	56	72.5	3.85	12	92.8	13.01	56	6.7	2.98
Black									
Males	6	74.5	6.75	1	72	—	6	7.8	2.23
Females	7	74.6	2.94	5	96.6	8.74	7	8.7	1.89
Total Black	13	73.5	4.93	6	92.5	12.73	13	8.3	2.02
Total	69	72.7	4.05	18	92.7	12.54	69	7.0	2.89

"Watch" (four or five significant responses plus revealing parent comments). Each child's check list was summarized, and the summaries were given by the school psychologist to the school nurse, the school social worker, and the speech clinician for further follow-up in September. No summaries were given to the kindergarten teachers.

2. In May and June 1969, the two kindergarten teachers scheduled visiting times for all the entering kindergarteners to introduce each child to the "sights and sounds" of the classroom, and to observe each child's development and behavior. Not all children were brought to school for this pre-kindergarten session. The teachers took notes of their observations.

3. In March, April, and May of 1970, all the children then in kindergarten were given the Screening Indexes by the school psychologist. Each subject was seen individually in a small conference room off the school office. Screening Index A was administered to all white boys, black boys and black girls. The five subtests of Index A (Jansky 1969) were: Letter Naming, Picture Naming-1, Gates Word Matching, Bender Visuo-Motor Gestalt, and Binet Sentence Memory. Screening Index B was administered to all the white girls. The subtests of this Index (Jansky 1969) were:

TABLE 2. SOCIO-ECONOMIC STATUS RATING SYSTEM

	Categories		
Number of Points[a]	*Occupation*	*Education*	*Total Family Income*
1	Professional Proprietor Business Official Technician	At least some college	$10,000 or more
2	Salesman Clerical Worker	High School graduate or equivalent	$ 7,000–9,999
3	Skilled Operator Machine Operator	Some high school (grades 9, 10, or 11)	$ 5,000–6,999
4	Service Worker Unskilled Manual Unemployed	Grade 8 or less	Less than $5,000

[a] The index score was computed as follows: Every family received the appropriate point score for each category in each column, and these scores were totaled. For example; a tool machine operator, who was a high school graduate, and who earned $9,500 a year, would be rated 7. A low SES Index Score represents *high* SES status, and a high SES Index Score represents *low* SES status (From Jansky & de Hirsch, *Preventing Reading Failure.*)

Letter Naming, Configuration-2, Picture Naming-3, Spelling Learning, and Configuration-1. The raw scores were converted to scaled scores, and using a cut-off total converted score of 50, each protocol was listed in one of three categories: "Risk," "Questionable," and "All Right." Each protocol was analyzed for the child's strengths and weaknesses in the four factors tapped by the Indexes. These factors, which account for about 40 percent of the variance of second grade reading achievement (Jansky 1969, Jansky and de Hirsch 1972) are: Visuomotor Organization, Oral Language Competence A, Pattern Matching (visual and auditory), and Pattern Memory (visual and auditory). (Protocols showing potential problem areas were discussed with the Extended Readiness and first grade teachers in September 1970, in an effort to modify instruction.)

4. In May 1970, the three kindergarten teachers listed each child in their classrooms in one of four categories: those they felt would do above average work; those they felt would do average work; those about whom there was some question; and those they would recommend for the Extended Readiness class.

5. In early June 1970, the language arts supervisor for that school, the kindergarten teachers, the school social worker, and the school psychologist met to decide on the 15–18 children who should go into the Extended Readiness class. An evening meeting for the parents of these children was

TABLE 3. OCCUPATIONAL CATEGORIES OF SAMPLE COMPARED TO NATION

Occupational Categories	*U.S.A. 1969*[a]	*Sample Kindergarten*	*Number in Sample*[b]
I. Professional and Technical	13.7%	14.9%	10
II. Farmers and Farm Owners; Managers, Officials and Proprietors (except Farmers)	13.4%	13.4%	9
III. Clerical and Kindred Workers; Sales Workers	12.1%	10.5%	7
IV. Craftsmen, Foremen Operatives, and Kindred Workers	39.5%	40.3%	27
V. Private Household Workers; Service Workers	6.6%	6.0%	4
VI. Farm Laborers and Foremen; Laborers (except Farm and Mine)	11.7%	13.4%	9
VII. Unemployed	3.0%	1.5%	1

[a] National figures from the *Statistical Abstract* of the United States Department of Commerce, 90th Annual Edition, March 1969.

[b] There are 67 families in this sample because of one pair of twins and one other pair of siblings.

held to explain why such a class was needed and how their children could benefit by the extra year. It was left up to the parents to decide whether their children would or would not go into the Extended Readiness class in the fall. (Unfortunately not all who needed such a class could be accommodated, and not all the children selected for the class went into it, because some parents were adamant about the "stigma" that might be attached to a child in such a class. For the most part, these were the children who later had to be retained in first or second grade and/or received special tutoring in the Learning Center, which was the resource and remediation classroom in the school.)

6. In March, April, and May of 1972, the Gates-MacGinitie Reading Comprehension test, Primary B, Form 1 (Gates and MacGinitie 1965) was administered to the 58 children still in that school. The same test was given to the five children who had gone to other schools in the system, and to four of the five children who had moved out of the system. It was possible to get the Metropolitan Achievement Test, Form B (Hildreth and Griffiths 1950) silent reading test results for one boy who had moved to another town, the grade score of which is comparable to the Gates-MacGinitie.

RESULTS

Predictive Efficiency

Screening Index A identified 91 percent (21/23) of the failing readers in the group of 40 black boys, black girls, and white boys. The Index singled out as risks 18 percent (3/17) of the children who eventually read at average or better grade levels. The validity coefficient between the Screening Index and the second grade silent reading test was 0.76. The mean for the group on the Screening Index was 49.95 with a standard deviation of 16.1. The mean for the reading test was a grade equivalent of 2.3 (a standard score of 42.05), and a standard deviation of 10.6.

Screening Index B identified 73 percent (8/11) of the failing readers among the 29 white girls. It singled out as False Positives 17 percent (3/13) those who later succeeded in reading. The validity coefficient between the Index and the second grade reading test was 0.67. The mean for the group on the Screening Index was 67.5 with a standard deviation of 22.6. The mean for the reading test was a grade score of 3.1 (a standard score of 50.31) and a standard deviation of 10.6.

When the entire sample was divided according to sex and race (Table 4), the True Positive levels for all but the white girls were 80 percent or better. Index A identified 93 percent of the white boys, 80 percent of the black girls, and all of the black boys who eventually failed to read. Index B

TABLE 4. EFFECTIVENESS OF SCREENING INDEXES A & B

	Percent True Positives	*Percent False Positives*	*Percent Reading Failures*
Black Boys	100 (4/4)	(0/2)	67 (4/6)
Black Girls	80 (4/5)	50 (1/2)	71 (5/7)
White Boys	93 (13/14)	15 (2/13)	52 (14/27)
White Girls	73 (8/11)	17 (3/18)	38 (11/29)
Total	85 (29/34)	17 (6/35)	49 (34/69)

TABLE NOTE: Cutting Point on the Indexes was found to be 56 for this population. Reading Failure was considered a grade score of 2.2 or lower on the silent reading test.

was less successful in identifying the white girls who were reading failures two years later.

The cutting point used to separate predicted failures from successes was found to be 56. A grade score of 2.2 or lower on the silent reading test was considered to be a reading failure.

When the group was divided according to socio-economic status, age, and intelligence (Table 5), True Positive levels still held over 80 percent among the black boys, black girls, and white boys. Again the white girls were less predictable: Screening Index B was more successful in predicting True Positive lower SES white girls (3 out of 4) than for the high-middle SES white girls, and it picked up all of the younger failing readers. It is of interest that 46 percent of all the children older than 69 months in June 1970, were reading failures, while 62 percent of those 69 months and younger failed.

The kindergarten teachers accurately predicted that 54 percent of the white girls, and 78 percent of the black boys, black girls, and white boys would be reading failures. Their work with the children during the school year enabled them to identify 24 of the total of 34 who eventually became reading failures. They had no difficulty picking the "risk" and "questionable" children; but the eight "average" and the two "above average" children, who later failed, did not seem to be having the kinds of problems in kindergarten that would lead the teachers to expect failure in first or second grade. Thus the subjective judgments of the teachers were correct for 71 percent of those children who later failed to read.

The number of children who were given individual intelligence tests

TABLE 5. SUMMARY: EFFECTIVENESS OF SCREENING INDEXES

	Black Boys, Black Girls, White Boys			*White Girls*		
Sub Groups	*Percent True positives*	*Percent False Positives*	*Percent Failing Readers*	*Percent True Positives*	*Percent False Positives*	*Percent Failing Readers*
As a Group	91 (21/23)	18 (3/17)	58 (23/40)	73 (8/11)	17 (3/18)	38 (11/29)
SES						
High-Middle	93 (14/15)	20 (3/15)	50 (15/30)	71 (5/7)	13 (2/15)	32 (7/22)
Low	88 (7/8)	(0/2)	80 (8/10)	75 (3/4)	33 (1/3)	57 (4/7)
Age in June '70						
Older ≥ 70 months	89 (16/18)	21 (3/14)	56 (18/32)	62 (5/8)	12 (2/16)	33 (8/24)
Yngr. ≤ 69 months	100 (5/5)	(0/3)	62 (5/8)	100 (3/3)	50 (1/2)	60 (3/5)
Intelligence						
IQ ≥ 90	83 (5/6)	100 (2/2)	75 (6/8)	100 (2/2)	50 (1/2)	50 (2/4)
IQ ≤ 89	100 (4/4)	—	100 (4/4)	100 (2/2)	(0/2)	100 (2/2)
School Entrance						
Check List-Risk	82 (14/17)	8 (1/12)	59 (17/29)	78 (7/9)	(0/16)	36 (9/25)
Teacher Rating						
High	(0/2)	(0/4)	33 (2/6)	—	(0/12)	(0/12)
Average	100 (3/3)	(0/7)	30 (3/10)	60 (3/5)	40 (2/5)	50 (5/10)
Questionable	100 (4/4)	50 (3/6)	40 (4/10)	75 (3/4)	100 (1/1)	80 (4/5)
Risk	100 (14/14)	—	100 (14/14)	100 (2/2)	—	100 (2/2)

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was too small to be of much significance in this study. Most of the tests were administered because the kindergarten, first, or second grade teachers hoped to gain some insight as to the cause of the children's learning problems from the reports of the test results. Therefore those children tested would naturally tend to be the children most easily identified as failures quite early in their school careers.

The McLeod School Entrance Check List was effective in predicting the success and failure of the 54 children whose parents completed the questionnaire during kindergarten registration in May 1969. It correctly identified 21 of the 26 who actually failed, one less than the Screening Indexes predicted for the same population (Table 6). While the Indexes and the Entry Check List did not agree on each child, between them they were able to identify 25 of the 26 failing readers.

Intervening Variables

Thirteen of the 69 children attended the Extended Readiness class for all or most of the 1970–71 school year. Eleven of that group went into first grade in the Fall of 1971. During their year in the XR class, they received intensive instruction in language, visual and auditory perception, gross and fine motor tasks, and letter names and sounds. Most of them were reading at least at the pre-primer level by the end of the year, and two seemed to be reading well enough to go right into second grade the following year. (Subsequent reading test scores showed that these two would probably have done better had they gone into first grade in the fall of 1971; they were both failing readers at the end of second grade.)

The four hard-of-hearing children received daily auditory training from specially trained tutors, who worked closely with the classroom teachers. Only one of the four had been able to make enough gains to pass the end-of-second-grade silent reading test.

Six boys, four in the first grade and two in the second grade in 1971–72, had daily tutoring in small groups in the Learning Center. Materials for remediation were Phonetic Keys, Merrill Linguistic Readers, Language Master, a variety of large and small muscle exercises, and auditory and visual training. One of the second graders was able to benefit enough to pass the reading test at the end of the year.

TABLE 6. COMPARISON OF THE EFFECTIVENESS OF SCHOOL ENTRANCE CHECK LIST AND OF SCREENING INDEXES WITH ACTUAL READING FAILURE

	Check List		*Screening Indexes*		*Reading Failure*
	Percent True Positive	*Percent False Positive*	*Percent True Positive*	*Percent False Positive*	*Percent*
Black Boys	100 (1/1)	(0/1)	100 (1/1)	(0/1)	50 (1/2)
Black Girls	50 (1/2)	—	100 (2/2)	—	100 (2/2)
White Boys	86 (12/14)	36 (4/11)	93 (13/14)	9 (1/11)	56 (14/25)
White Girls	78 (7/9)	19 (3/16)	67 (6/9)	12 (2/16)	36 (9/25)
Total	81 (21/26)	25 (7/28)	85 (22/26)	11 (3/28)	48 (26/54)

Summary of Findings

The Screening Indexes identified slightly more than four out of the five children who failed reading at the end of second grade. They picked up as high risks an additional six children (three of whom were white girls) who subsequently were able to perform on or above grade level on a silent reading test. Subjective teacher ratings in kindergarten picked seven of the ten eventual failures. A pre-kindergarten entry check list based on parents' answers to significant language, physical, developmental, and personality questions was nearly as successful in prediction as the Screening Indexes, although they picked up as False Positives seven children who were successful readers at the end of second grade. When the results of the Check List and the Indexes were combined, 96 percent of the failing readers in the subsample of 54 were identified by the end of kindergarten.

As Jansky and de Hirsch (1972) point out, no predictive battery can be expected to identify every single failing reader, and any predictive battery will pick up as false positives some children who eventually will succeed. With the many physical, cognitive, and developmental changes occurring in the life of the five-to-seven year old, prediction is hazardous at best. However, the Screening Indexes proved efficient predictive instruments with this small sample of 69 children whose socio-economic and cultural backgrounds had a broader range than the original population. The kindergarten teachers' assessment of each child yielded valuable subjective data which further refined the prediction.

An added bonus to prediction was the fruitful use of the pre-kindergarten Entry Check List which in the May before kindergarten entry gave warning of the eventual failure of 21 children in the subsample of 54. This means that prevention could be started earlier: in the summer before kindergarten, programs could be devised utilizing the often empty elementary schools. Besides a small paid staff, mothers of the "at risk" children, who were not employed, could be trained as aides. Experiences in language, listening, visualizing, and manipulating could be incorporated in the program, and continued in the kindergarten program in the Fall. Parents' interest and cooperation could be sought throughout the kindergarten year. Subjective and objective screening of all the children in the Spring of kindergarten year would allow time for a more detailed diagnosis of those children about whom tester and/or teacher are in doubt. Both the Screening Index and the Diagnostic Battery (Jansky and de Hirsch 1972) include four of the factors

that contribute most to eventual reading success, making it possible to plan the individual child's program in first grade around his functioning, and to begin intervention immediately in September of first grade.

It is a serious situation when 49 percent of a kindergarten class tested two years later cannot read above a grade equivalent of 2.2 in spite of "good" first and second grade teachers. It was expected that the children who went into the Extended Readiness Class, and those who repeated first grade, all having been exposed to only first grade instruction, would be failing readers on the second grade test; but far too many of this group (65 percent) were unable to read above a grade equivalent of 1.4 after two years of readiness and reading instruction. Obviously more than just extra time is needed for such children; more appropriate intervention on a long term basis must be planned.

This study further bears out what previous research has found (Blom 1971, de Hirsch et al. 1966, Goldberg and Schiffman 1972, Jansky 1969, Jansky and de Hirsch 1972, *Reading Disorders in the U.S.* 1969, and Roswell and Natchez 1964): that black girls, black boys, and white boys are more liable to have difficulty in learning to read than white girls. At the same time, white girls were the most unpredictable: some, who gave every indication of maturity and readiness in kindergarten, were reading failures at the end of two years; others, whose scores were below the cut-off point on the Screening Index B, were successful readers two years later. Their kindergarten teachers were no more successful in their subjective predictions of the outcomes with white girls. As Jansky notes (1972), the interaction between the variables of sex, race, sociocultural status, intelligence, health, change of teachers and schools, family crises, and ego strength on the one hand, and achievement on the other, is complex. But the fact that fewer black and white girls were reading failures than black and white boys would suggest that, unless public schools change their present climate and pattern of teaching, more males than females will continue to fail to read satisfactorily.

More younger children tended to fail than those who were 5 years, 10 months or older at the end of kindergarten—62 percent as compared to 46 percent. Of the younger boys, 62 percent failed as compared to 52 percent of the older boys. (There were no younger black girls.) While older chronological age seems to be slightly more advantageous, this particular population had four boys who had repeated kindergarten, whose age was 6 years, 6 months or older by June of kindergarten year, and who were reading

failures at the end of second grade. Older chronological age and more time with kindergarten readiness activities did not help them learn to read.

Finally, this study shows the importance of adapting norms, or cutting points, to the academic expectations of a given school. Norms and cutting points may vary from school to school within the same city or town, depending on the background and environment of the children who attend each school. The cut-off score of 50 for the Screening Index, found to be successful in the pilot population, was too low for this sample of 69; at this point, three white girls and two white boys would not have been identified as potential failing readers. Therefore, in order to decide on the particular cut-off point on the Screening Index that will identify as large a proportion of failing readers as possible, the kindergarten children in each school should be ranked according to their Index scores. Then, as Jansky and de Hirsch (1972) suggest, the percentage of those children who are to form the high-risk group is determined by the percentage of previous classes of children who fall below the school's acceptable reading level at the end of second grade, adding, for good measure, as much as ten percentage points to account for the false positives who will be picked up in the process of screening. Assessment of the percentages of second grade reading failures should be made every two or three years to allow for the adjustment of the norms or cutting points, as well as to evaluate the success of intervention.

The United States is committed to "educate" all its children, and at present, such education is premised on the need for each child to learn to read with skills commensurate with his other abilities. Public Schools and their children today cannot afford to wait until a child fails before attempting remediation. Repeating grades does not seem to have achieved results. Therefore it behooves educators to prevent failure. It is now possible to identify and diagnose at a much earlier age than was thought possible a few years ago; and such identification is not costly, nor does it require a special staff. But without intervention, or programs tailored to each child's need, or continued re-evaluation, any diagnosis is worthless except as a statistic. We know many of the factors that contribute to the reading process; we know a great deal about the mental, physical, and emotional development necessary for learning to read; we know much about varieties of learning styles and their pedagogical implications; we now need to get on with the job of teaching each child to read in the way that he can best learn.

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4. Developmental Dyslexia—Prevailing Diagnostic Concepts and a New Diagnostic Approach

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Introduction

There is growing interest in differentiating developmental dyslexia,[1] as a specific psychoneurological learning disorder, from nonspecific reading retardation. Such differentiation has immediate practical bearing since specific dyslexia calls for remedial reading techniques that are not required in the management of nonspecific reading disorders. Moreover, early diagnosis of developmental dyslexia is essential for successful remediation and to prevent school failure with concomitant loss of self-esteem.

The need for practical direct diagnostic criteria that would facilitate the early identification of developmental dyslexia has come into the forefront. This need is felt especially by physicians and psychologists, who are often the first to be consulted about the child's inability to read. It is also recognized that the diagnosis cannot be relevant to the educator unless it has immediate implications for remediation.

The objectives of this paper are: (1) to present a critical review of prevailing diagnostic concepts of developmental dyslexia and (2) to briefly describe three atypical patterns of reading and spelling, revealed through

[1] The terms "dyslexia," "specific dyslexia," and "specific developmental dyslexia" are used here interchangeably with "developmental dyslexia." None is used as a broad term encompassing nonspecific reading disorders. Others synonyms are "specific reading disability," "primary reading retardation," "strephosymbolia," "developmental alexia," "gestalt-blindness," and "specific language disability." The older term "congenital word blindness" is still widely used.

an empirically evolved diagnostic screening procedure, that provide a basis for classifying dyslexic children into *three subtypes*, with prognostic and therapeutic implications that differ for each subtype.

Prevailing Diagnostic Concepts

The prevailing diagnostic criteria for specific developmental dyslexia have been discussed in greater detail elsewhere (Boder 1971b). Having evolved in the fields of medicine, psychology, and education, they tend to vary with the disciplines of those involved in making the diagnosis. Within each field, many professionals make the diagnosis of specific dyslexia reluctantly, even when confronted with a severe persistent inability to read that cannot be otherwise accounted for. One important reason for this reluctance is that the emotional overlay characteristic of dyslexic children tends to be interpreted as the primary cause of their inability to read, rather than as secondary and reactive to it. Most important, no definitive diagnostic criteria for specific dyslexia have been established.

On review of the diverse multidisciplinary literature on dyslexia, it becomes evident that much of the confusion and controversy are unnecessary, arising in large part from lack of consistent terminology and insufficient interdisciplinary communication. A closer analysis, focusing on how the diagnosis of specific dyslexia is actually being made today by those who accept it as a psychoneurological learning disorder, reveals certain unifying concepts and an increasing convergence in point of view. Three fundamental diagnostic approaches can be identified.

In the presence of significant reading retardation—usually two or more years below grade level or mental age, although a retardation of even one year may be regarded as diagnostically significant—developmental dyslexia is diagnosed in one or more of the following ways: (1) *by a process of exclusion;* (2) *indirectly,* on the basis of its neurological or psychometric concomitants; (3) *directly,* on the basis of the frequency and persistence of certain types of errors in reading and spelling. In all diagnostic approaches poor response to standard remedial reading techniques and a familial history of reading disability (Hallgren 1950, Walker and Cole 1965) are viewed as important corroborative evidence.

The most widely utilized approach among physicians is *diagnosis by exclusion.* Essentially a differential diagnosis, it relies on ruling out other

explanations of the child's inability to read: mental retardation, gross defect in vision or hearing, speech impairment, emotional disorder, bilingualism, sociocultural disadvantage, and poor or insufficient instruction.

This widely accepted medical approach has provided useful operational definitions of developmental dyslexia.[2] Yet, diagnosis by exclusion has the disadvantage of identifying too few children, since it excludes from diagnostic consideration the crucial fact that developmental dyslexia may coexist with any one or a combination of contributory factors and be aggravated by them.

Indirect diagnosis through neurological concomitants is the approach emphasized by pediatric neurologists. It is typical for developmental dyslexia to be associated with other developmental disorders and a variety of minimal, or "soft," neurological signs pointing to a parietal lobe dysfunction (Cohn 1964, Critchley 1970, Waites 1968, Whitsell 1965) or neurophysiological immaturity (Bender 1959, de Hirsch 1952). Among these signs are crossed or incompletely established lateral dominance with a tendency to ambidexterity, right-left disorientation, cerebellar signs, nonspecific fine and gross motor clumsiness (Bakwin 1968, Critchley 1970), including constructional apraxia and finger agnosia (Kinsbourne and Warrington 1966), abnormal responses on the Bender face-hand test (Drew 1956) and Schilder's arm-extension test (Silver and Hagin 1964), developmental speech and language disorders (Ingram 1963), and the hyperkinetic syndrome (Boder 1966, de Hirsch 1952).

Indirect diagnosis through psychometric concomitants is the most widely used approach among clinical and educational psychologists. Certain patterns of deficits, as revealed by psychological test profiles, have been found to be consistently associated with developmental dyslexia. These patterns are viewed as important corroborative evidence by neurologists and pediatricians, and are widely relied upon by educators in planning a remedial program. Among the most commonly used tests, viewed as high in organic indicators, are the Wechsler Intelligence Scale for Children (WISC), Bender Visual-

[2] The definition of specific developmental dyslexia accepted by the Research Group on Developmental Dyslexia of the World Federation of Neurology reads: "A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin" (Critchley 1970). Eisenberg's (1966) definition is similar: "Operationally, specific reading disability may be defined as the failure to learn to read with normal proficiency despite conventional instruction, a culturally adequate home, proper motivation, intact senses, normal intelligence, and freedom from gross neurological defects."

Motor Gestalt Test, Goodenough Draw-a-Person Test, Benton Visual Retention Test, Frostig Test of Visual Perception, Wepman Auditory Discrimination Test, and the Illinois Test of Psycholinguistic Abilities (ITPA).

On the WISC in particular, certain characteristic profiles, including low scores on the Digit Span and Codes subtests and a discrepancy of 15 points or more between the Verbal and Performance Scales, are regarded by many investigators as being diagnostic of specific dyslexia, a relatively low Verbal IQ score being especially significant (Clements and Peters 1962, Rabinovitch 1968). Distorted body-image, as revealed by a low score on the Goodenough Draw-a-Person Test, and poor performance on the Bender Gestalt Test are also viewed as characteristic (Bender 1959, de Hirsch 1952).

A selective deficiency in reading and spelling on standard achievement tests, as compared with performance in arithmetic, is generally viewed as helpful in confirming a diagnosis of specific dyslexia and is regarded by some investigators as essential (de Hirsch 1952).

Direct diagnosis through analysis of reading and spelling performance is the approach most widely used by reading specialists, who have in recent years developed a rich variety of tests for reading analysis. The central concern of the reading specialist, however, is therapeutic and thus essentially symptomatic. In contrast to the physician, whose central concern is the diagnosis of developmental dyslexia as a clinical entity and its differential diagnosis, the reading specialist seeks to identify individual educational needs and to design effective programs of prescriptive teaching, drawing upon a variety of specialized pedagogical techniques (Cox 1971, Johnson and Myklebust 1967, Jones 1971, Rawson 1971, Slingerland 1966).

The most frequently used direct diagnostic approach is based on the observation and classification of so-called dyslexic or perceptual errors in the child's reading and spelling performance, and especially on the frequency and persistence of such errors beyond the age of eight, when they have become uncommon in the normal reader (Money 1962). Among these errors, and generally regarded as the most diagnostic, are static and kinetic reversals, first emphasized by Orton (1937, Thompson 1966), extraneous-letter and omitted-letter errors, and letter-order errors. Classifying the errors and relating them to deficit functions are the essential aspects of this direct and practical approach (Bauza et al. 1962, Critchley 1970, Ingram 1963). Its persistent weakness has been the underlying assumption by some persons that children with developmental dyslexia constitute a homogeneous group. The dyslexic errors in reading and spelling, and the functional deficits these

errors reflect, tend to be discussed as if they occur at random within the whole category of dyslexic children. When this is the point of view, a diagnosis of developmental dyslexia can offer little or no guidance to remediation and therefore remains essentially irrelevant to the educator. With the current emphasis on the heterogeneity of developmental dyslexia, however, there is a growing trend toward identifying subtypes.

Direct and indirect diagnostic approaches are combined in *delineating syndromes* within the general population of dyslexic children. Myklebust's delineation of *auditory dyslexia* and *visual dyslexia* is a notable contribution demonstrating that dyslexic children are a heterogeneous rather than a homogeneous group (Johnson and Myklebust 1967, Myklebust 1965). These two syndromes manifest deficits in the central auditory and visual processes prerequisite to reading. Myklebust views auditory dyslexia as a deficit in ability to "auditorize," and visual dyslexia as a deficit in ability to "visualize." The delineation of the two subtypes is not limited to aspects of reading and spelling performance, but is based on a total language evaluation and a number of other variables.

Kinsbourne and Warrington (1966), studying a group of backward readers who showed a disparity of at least 20 points between their Verbal and Performance IQ's on the WISC, have delineated two distinct subgroups which they view as syndromes of developmental cerebral deficit in the language sphere and in sequential ordering, respectively: Group 1, the *language-retardation group*, with a lower Verbal IQ, and Group 2, the *Gerstmann group*, with a lower Performance IQ and specific difficulty with tests of finger differentiation and order, constructional tasks, and mechanical arithmetic. Extraneous-letter errors were typical in the spelling of Group 1; letter-order errors were typical of Group 2.

Bannatyne (1966) has identified two main subgroups among dyslexic children, both of which appear to meet the criteria for specific dyslexia: *genetic dyslexia* and *minimal neurological dysfunction dyslexia*. He views children with genetic dyslexia as representing the lower end of a normal continuum in verbal ability within the general population, and children with minimal neurological dysfunction dyslexia as neurologically abnormal. In his opinion the majority of disabled readers fall into the genetic subgroup.

On the basis of characteristic test profiles on the Illinois Test of Psycholinguistic Abilities (ITPA), Bateman (1968) identified three subgroups among children with reading disabilities: Children with poor auditory memory, children with poor visual memory, and children with deficits in both

auditory and visual memory. She suggests that in the initial stages of remediation a visual (sight-word) method be used for the first subgroup, phonics for the second, and tactile-kinesthetic method for the third.

Ingram et al. (1970) describe three subgroups of specific dyslexics on the basis of types of errors in reading—audiophonic and visuospatial. The errors of the majority were found to be mixed.

Recently, on the basis of subtest analysis of the WISC profiles of 300 significantly retarded readers, Smith (1970) has identified three subgroups. Children with WISC Pattern I (67 percent) showed strength in subtests relating to spatial ability; they were at a lower level in symbol manipulation and deficient in sequencing ability. Pattern II children (15 percent) had deficits in subtests of spatial ability and frequent deficits in visual-motor coordination. Pattern III (18 percent did not meet the criteria for Patterns I and II, yet had characteristics of both. Smith identifies her Pattern I with Bannatyne's genetic dyslexia and Pattern II with his minimal neurological dysfunction dyslexia.

A New Diagnostic Approach

Through an empirically evolved diagnostic screening procedure for developmental dyslexia, three distinctive patterns of reading and spelling among dyslexic children have been revealed. Discussed in some detail elsewhere (Boder 1971a,b), this *diagnostic approach through atypical reading-spelling patterns* is summarized here.

One or another of the three reading-spelling patterns has been found in all severely retarded readers who fulfill the operational definitions for developmental dyslexia noted above. None of the patterns has been found among normal readers and spellers (that is, in children up to grade level, or above, in both reading and spelling, or whose achievement in reading and spelling is commensurate with mental age). In addition, a consistent relationship has been found between the reading and the spelling performance of a dyslexic child, so that how he reads and how he spells are mutually predictive. Long-term observations indicate that the reading-spelling pattern of a given dyslexic child, though it can be compensated by remedial teaching, remains consistent, even when his reading achievement level has risen significantly.

The three atypical reading-spelling patterns appear, therefore, to be

diagnostic in themselves. As such, they provide a basis for classifying dyslexic children into three main subtypes—*dysphonetic, dyseidetic,* and ***mixed***—and for a useful direct diagnostic approach. In addition, these three patterns—since they reflect the dyslexic child's functional assets as well as deficits in the central visual and auditory processes prerequisite to reading—appear to have prognostic and therapeutic implications, differing for each of the three subtypes.

The reading-spelling pattern of children in the *dysphonetic group* (Group I) reflects a primary deficit in letter-sound integration and in the ability to develop phonetic word-analysis skills. They read *globally,* responding to whole words as configurations, or gestalts. Lacking phonetic skills, they are unable to decipher words that are not in their sight vocabulary. Their numerous misspellings, being typically *nonphonetic,* are unintelligible (Fig. 1). Their most striking errors are "semantic-substitution errors," e.g., reading "funny" for "laugh," "chicken" or "quack" for "duck," "answer" for "ask," "airplane" for "train."

The reading-spelling pattern of children in the *dyseidetic group* (Group II) reflects primary deficit in the ability to perceive whole words as gestalts. They read through a processs of *phonetic analysis,* sounding out most words, familiar and unfamiliar, as if they were being encountered for the first time. Their misspellings, being *phonetic,* are intelligible (Fig. 2). Examples: "lisn" for "listen," "sos" for "sauce," "biznis" for "business," "laf" for "laugh."

Children who are *both dysphonetic and dyseidetic* (Group III) are deficient both in developing phonetic word-analysis skills and in perceiving whole words as visual gestalts. Without remedial reading therapy they tend to remain *alexic;* they are, in effect, nonreaders and nonspellers (Fig. 3).

The classic dyslexic errors, which are generally considered to be diagnostic of developmental dyslexia—notably, the static and kinetic reversals and letter-order errors—are found to occur in all three of the subtypes, or may be absent.

Dysphonetic Group I, by far the largest of the three subtypes, is the one to which the term "gestalt-blind" is not applicable, although it can be aptly applied to Groups II and III.

The illustrations show the reading-spelling patterns as revealed by the Spelling Test in the diagnostic screening procedure. The "Known Words" and "Unknown Words" dictated in the Spelling Test are based on the results of the Reading Test. The "Known Words" are selected for dictation

ILLUSTRATING NONPHONETIC SPELLING OF A DYSLEXIC CHILD IN DYSPHONETIC GROUP I

Figure 1. Nonphonetic spelling of a dyslexic child in Dysphonetic Group I. Ten-and-a-half-year-old boy, grade 4, average intelligence (Binet, Form LM). Reading level: between grades 1 and 2 (sight vocabulary); word-analysis skills minimal. (Boder 1971c.)

from the child's *sight vocabulary* at his reading level and below; the "Unknown Words" are selected from words *not* in his sight vocabulary at his actual age-grade level and above. Spelling of the "Known Words" reveals the child's ability to revisualize his sight vocabulary, i.e., words he can read as gestalts; spelling of "Unknown Words" reveals his ability to write good phonetic equivalents of words not in his sight vocabulary, i.e., his word-analysis skills.

Exploration of the child's ability to spell "Known" and "Unknown words" from dictation is a unique and crucial feature of our Diagnostic Screening Procedure for Developmental Dyslexia (Boder 1971a,b). Designing the spelling tasks to parallel the reading tasks disclosed a consistent relationship between how a dyslexic child reads and how he spells, and led to the delineation of the three distinctive reading-spelling patterns described in this paper.

ILLUSTRATING PHONETIC SPELLING OF A DYSLEXIC CHILD IN DYSEIDETIC GROUP II

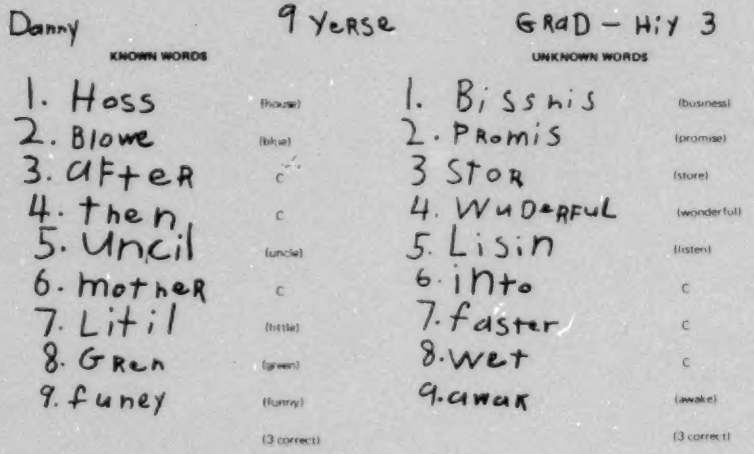

Figure 2. Phonetic spelling of a dyslexic child in Dyseidetic Group II. Nine-and-a-half-year-old boy, grade 3, IQ 92 (Binet, Form LM). Reading level: primer to grade 1 (sight vocabulary); grade 3 (word-analysis skills). Note that in the lists of "known" and "unknown" words the only correctly spelled words are the phonetic ones. (Boder 1971a.)

ILLUSTRATING NONPHONETIC SPELLING OF A DYSLEXIC CHILD IN COMBINED DYSPHONETIC-DYSEIDETIC GROUP III

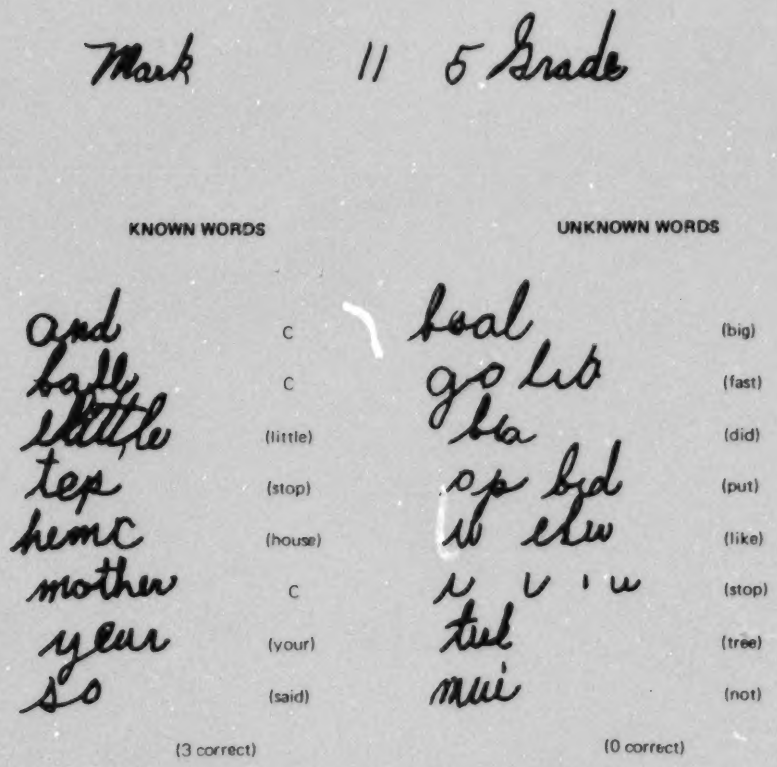

Figure 3. Nonphonetic spelling of a dyslexic child in combined Dysphonetic-Dyseidetic Group III. Eleven-year-old boy, grade 5, IQ 97 (WISC: Verbal IQ 84, Performance IQ 113). Reading level: pre-primer (sight vocabulary); no word-analysis skills. Note that the only correctly spelled words, as in Group I, are in the list of "known" words, phonetic or not, selected from the child's very limited sight vocabulary. (Boder 1971a.)

Discussion

Reading-Spelling Patterns as Diagnostic Criteria

In the context of the prevailing diagnostic criteria for developmental dyslexia, the writer's diagnostic approach can be classified as (1) an extension of the direct approaches and (2) one of the growing number of diagnostic approaches demonstrating that children with developmental dyslexia are heterogeneous both etiologically and clinically.

It differs from the other direct approaches primarily in analyzing reading and spelling *jointly* as interdependent functions, thus revealing how the reading and spelling of dyslexic children are related to each other. It seeks to identify diagnostic patterns in the total reading and spelling performance of dyslexic children, rather than in their errors alone. In the same sense that a child's pattern of errors reflects his functional deficits in reading and spelling, the total reading-spelling pattern reflects his *functional assets as well as deficits*.

Therefore, each of the three clinical subtypes of developmental dyslexia identified on the basis of the three atypical reading-spelling patterns (Boder 1968, 1970, 1971a,b) has its own prognostic and therapeutic implications. The diagnosis of such subtypes is highly relevant to the educator since it offers a rational basis for specific prescriptive teaching and innovative approaches to remediation.

Although the usefulness of the reading-spelling patterns as diagnostic indicators and their remedial and prognostic implications await further assessment by other investigators, their identification already offers a fresh point of departure for further studies of developmental dyslexia.

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5. The Language Therapist as a Basic Mathematics Tutor for Adolescents

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The language therapist who undertakes to work with a dyslexic adolescent faces a complex task and a complex individual. (The terms, *dyslexic* or *dyslexia,* will be used throughout this paper to refer to an otherwise healthy and normal individual who has specific problems of a primary nature with learning to read, write, spell, or manipulate symbols when presented with conventional modes of instruction ordinarily adequate for most children. [See also the discussion of terminology in the paper on developmental dyslexia by E. Boder in this issue of the *Bulletin.*]) Not only do the language deficits in reading, writing and spelling demand attention but also the adolescent's struggle with course work. In addition, years of frustration have taken their toll in psychic energy expended in school survival effort, and the effects of these years often converge during adolescence with the sometimes bewildering physiological and psychological changes taking place in a period of developmental transition from childhood to adulthood. The learning instinct, present in all human beings, is now complicated by feelings of frustration, by self-doubt and a sense of inadequacy, by resentments toward school, society and often the family, and by a distrust of teachers (Dollard *et al.* 1939.) It is a time of extreme vulnerability for, as Erikson (1950) has stated, "Adolescence is the age of the final establishment of a dominant positive ego identity. It is then that a future within reach becomes part of the conscious life plan."

Thus, the language therapist cannot deal simply with the teaching of reading, spelling and writing but must go beyond that and recognize the need to assist the adolescent to cope both with himself and his school work. In fact, many language therapists do help their students to handle course work

more effectively but usually only when that course work is dependent upon reading and writing skills, as in English and social studies.

Rarely, however, do therapists realize that mathematics should have an equal claim if their students have fallen seriously behind and are not prepared for high school mathematics. Nor are they always aware that the insights the therapist brings to the teaching of language skills to a dyslexic student may be especially helpful in the teaching of basic mathematics.

For without these insights, remedial instruction provided by teachers of mathematics, however competent as mathematicians and excellent as instructors for non-dyslexic students they may be, may in fact be ineffective for dyslexics. The fundamental understanding of the nature and manifestations of dyslexia and its concomitant problems with written symbols and spatial orientation is as essential for the remedial mathematics teacher as it is for the language teacher. So long as transposed numbers, omission of steps in a sequence of operations or misaligned columns appear to be merely "careless" errors, so long will patient explanation and illustration, repeated drill, use of flash cards, games or other devices fail to accomplish the goal of proficiency in mathematics. The teaching problem is even more perplexing when the student seems capable of grasping the concepts but is then unable to carry them through the written work accurately or seems unable even to memorize the multiplication tables.

The difficulty that many dyslexic children have with numerals and arithmetical operations should not be surprising. The visual memory of form, direction and sequence, linked to meaningful concept, even when reading is finally achieved may remain an acute problem for a severely dyslexic student. Similarly, the manipulation of written mathematical symbols involves form perception, memory and sequence within a spatial organization and in association with concepts. Critchley (1970) refers to the difficulty some dyslexics have with writing numbers from dictation, especially numbers of many digits, and to their confusions with the zero. He mentions other difficulties as well—retaining a series of digits in memory, problems with visualizing numbers, inability to memorize the multiplication tables—to the detriment of "powers of calculation." Thirty years ago, Fernald (1943) found similar problems and based her remediation techniques in arithmetic upon understanding of the language disability.

Rabinovitch (1968) states:

> In dyslexia, contrary to a commonly held impression, arithmetic skills are also impaired. Occasionally we see a child with a selective learning

deficiency in which reading may be adequate but spelling very poor or a deficiency in which reading may be poor and arithmetic excellent. These cases of limited and specific disability are the exception. The dyslexic child's achievement test protocol usually indicates greatest impairment in spelling, somewhat less impairment in reading, and even less impairment in arithmetic. All three areas, however, are involved, and this is expected, in view of the fact that all three involve symbolization.

In her longitudinal study of dyslexic boys, Rawson (1968) notes that, along with spelling, arithmetic scores also were sometimes lower than scores for reading. She cites rote memory and manipulation of written symbols as factors. S. Orton (1937) illustrated his discussion of strephosymbolia, a term he used for dyslexia, with educational profiles of several children aged eight to fifteen. In each case, arithmetic achievement was below mental age expectation.

Cohn (1971), on the basis of a longitudinal study of children with learning disabilities, suggests that arithmetical ability "is certainly no better developed, or easier to achieve, than the other elements of language." Cohn maintains that the finding of "isolated cases in which arithmetical performance far outdistances other language attributes only emphasizes the idiosyncratic nature of such an occurrence." Cohn (1961) also points to a relationship in directional and spatial problems [believed by Orton (1966) to be related to lateralization and cerebral dominance] and problems with calculation, especially in multiplication.

Benton (1962) discusses the fact that specific dyslexia occurs in association with a variety of deficits, among them an impairment in arithmetical calculation, and points to the association of this impairment with dysgraphia.

Other investigators also point to an association of an arithmetic deficit with dyslexia, among them J. Orton (1966) and Money (1966). Orton, in a reference to poor spelling as a "residual of a dyslexic difficulty after a pupil has learned to read" or as the result of poor visual memory, writes of an associated difficulty with arithmetic problems. Money refers to a number of case studies in which arithmetical deficits seemed linked to the factors in the reading and spelling disabilities of dyslexic children. Discussing patients first seen in adolescence and who have severe reading retardation, Rabinovitch (1962) states that arithmetical competence is "usually also very low although it may be somewhat higher than the reading level."

The dyslexic adolescent's problem in mathematics has its roots in the primary and elementary grades and in his difficulties then with performing and learning the basic arithmetic operations. Development of necessary

mathematical concepts, vocabulary and use of symbols were impeded in those years by problems similar to those that interfered with the acquisition of reading and spelling. Reversals, inversions, transpositions, and substitutions of numerals, along with similar behavior with alphabetic symbols, persist in the dyslexic child long after such behavior is developmentally normal (Ilg and Ames 1965).

In addition to the rotational problems with numerals, the dyslexic child may be affected by spatial disorganization, as in poor arrangement of number columns and other work on unruled paper; confused concepts relating to reversibility; errors and omissions in sequential steps of operations; and extreme difficulty with symbols indicating quantitative relationships, such as *greater than* and *less than*, as well as other non-numerical symbols. (See Figure 1.) The use of non-numerical symbols, formerly not introduced until high school algebra and geometry except for the addition, subtraction, multiplication and division signs, is now an essential part of the written arithmetic language in the elementary and junior high school grades. The new symbol "language" that may be visually difficult for the dyslexic child has been introduced in an attempt to move from rote teaching of arithmetic to the teaching of the concepts and universals that are the essence of mathematics (Kelley and Dean 1970.)

The young dyslexic child may have further difficulties in the vocabulary with such terms as *commutative*, *associative*, and *distributive*, since he may confuse them unless he is being taught by a method that takes into account his need for careful sequencing and structuring. Multiplication tables may be difficult to memorize. And *numerator* may be confused with *denominator*, *prime numbers* with *prime factors*, and "carrying" with "borrowing." Base ten and understanding the function of the zero seem more than enough for some to grapple with; for these children, working in base six or seven or doing "clock arithmetic" seems only to add to their confusion.

It is little wonder then that a dyslexic student, even if he has overcome some of his language difficulties, often arrives at high school seriously deficient in basic arithmetical skills and "hates math." But it is a rare secondary school that does not require some form of mathematics in the curriculum and, indeed, with justification. We live in an age and in a society where survival itself becomes extremely difficult without at least a minimal mastery of the three "R's."

In language therapy, the well-trained teacher has made certain assumptions about learning and teaching in general and about learning and teaching

=	equal to	≠	not equal to
>	greater than	<	less than
≥	greater than or equal to	≤	less than or equal to
≱	not less than and not equal to	≯	not greater than and not equal to
≮	is not less than	≯	is not greater than
±	plus or minus	≅	approximately equal to
∪	union	∩	intersect
5_2	subscript	5^2	exponent
⇒	implies	⇔	if and only if
~	is similar	π	pi
∈	is a member of	∉	is not a member of
⊥	is perpendicular to	∠	angle

possible rotations: 2 5 · S Ƨ · 6 9 · $\frac{1}{4}$ $\frac{4}{1}$ · $2\frac{2}{3}$ $\frac{2}{25}$ $\frac{22}{5}$ · 12

5 Ƨ · Ƨ S · 9 6 · $\frac{1}{7}$ $\frac{7}{1}$ · $2\frac{5}{2}$ $\frac{25}{2}$ $\frac{5}{22}$ · 21

Figure 1. Mathematical symbols that may present possibilities for visual and conceptual confusions.

for dyslexics in particular, and it is these assumptions and the teaching strategies that follow that can be applied to the remediation that will prepare the adolescent for high school mathematics.

The first assumption is that *learning involves the recognition of patterns which become bits of knowledge that are then organized into larger and more meaningful units.*

A second assumption is that *learning for some children is more difficult than for others because of visual or auditory or motoric deficits or disequilibriums that interfere with the ready recognition of patterns.*

A third assumption is that *some children have difficulty with the organization of parts into wholes, due to a developmental lag or a disability in the handling of spatial and temporal relationships, or in unique problems with integration, sequencing or memory.*

Certain assumptions about teaching must then follow. The first involves clarification of communication. *Communication in teaching is such that it ensures that the learning task is made clear to the learner and the student's problems in learning become clear to the teacher.* Implicit in this assumption is still another, *that the teaching will provide those experiences that serve to clarify the learning task so that the student will know what he is to learn.*

The student must be provided with a sequence and a structure that will enable him to recognize the patterns that he must organize into larger and increasingly more meaningful units. The experiences that develop the sequences and structures must be designed to: (1) circumvent or overcome sensory modality deficits or weaknesses; (2) circumvent the problems with spatial or temporal relationships or sequencing; (3) develop organization and integration; and (4) provide the associations that will ensure memory.

Furthermore, the teacher must recognize the learner's need to internalize each learning as the basis for further learning. It follows, therefore, that each experience must enable the learner to construct logical rules that will enhance his ability to deal successfully with learning in a hierarchical arrangement of complexity.

In discussing the importance of structure, Bruner (1965) states that, "Learning should not only take us somewhere; it should allow us later to go further more easily." It is both the now and the later that the therapist must ensure in whatever structure is presented to the student. But the dyslexic adolescent has a past as well as a present and a future. How are we to overcome the effects of that past so that he can deal confidently and effectively with the present and the future?

A first step in this direction is the avoidance of a repetition of the kind of teaching that has proven unproductive in the past. For example, if the multiplication facts are still not mastered (not a rare finding in dyslexic adolescents), then additional drill will probably be wasteful and time-consuming. Instead, a reference chart can be supplied for use while concepts are explored in various operations. Thus, the student is given the opportunity to manipulate the number facts of multiplication as he progresses through problem-solving at the cognitive level that he has reached through the process of maturation.

But working with the reference chart alone may not be enough; linking other experience may also be necessary. For example, we might begin with the manipulation of nine pieces of construction paper that has been cut into

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
13	26	39	52	65	78	91	104	117	130	143	156	169	182	195
14	28	42	56	70	84	98	112	126	140	154	168	182	196	210
15	30	45	60	75	90	105	120	135	150	165	180	195	210	225

Figure 2. Multiplication chart for reference during operations.

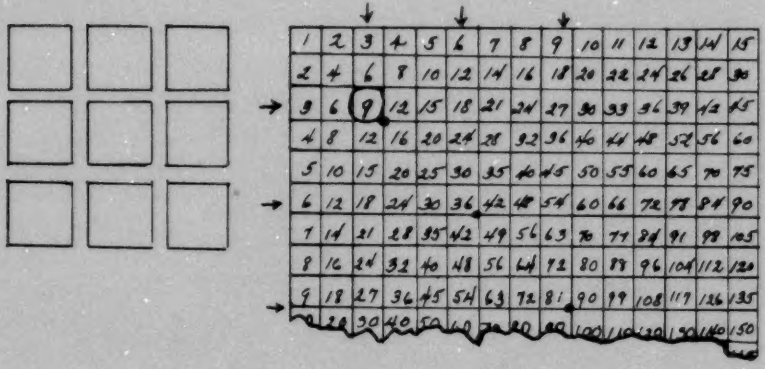


Figure 3. Use of one-inch squares and multiplication chart in beginning multiplication and division, starting with power of two and finding square root.

one-inch squares. Working with the one-inch squares, the student can discover that $3 \times 3 = 9$ and that $3^2 = 9$ and he can also locate this on the chart. Similarly, he can find 6^2, 9^2, 12^2 and 15^2 until he begins to see the pattern that emerges. He can then be asked to locate 7^2 or 8^2 or 11^2 directly on the multiplication chart.

At this point, the process can be reversed to find the square roots of 9, 36, 81, 49, etc. The meaning of the words, *root* and *radical*, are explained in relation to the root the student knows as a vegetable, *radish*. The derivation from the Latin *radic-*, *radix* is demonstrated as well in order to build a further association.

As the student works with numbers to the power of two and with square roots, he discovers the inverse relationship not merely of squares and square roots but also of multiplication and division and the underlying law of inverse operations. Furthermore, we are teaching the dyslexic student, who previously may not have been able to find order in earlier arithmetic experience, that there is such order, and we are doing it in a manner similar to that which we use in his language therapy to enable him to discover order. This emphasis on discovery in learning has in Bruner's words, ". . . precisely the effect on the learner of leading him to be a constructionist, to organize what he is encountering in a manner not only to discover regularity and relatedness, but also to avoid the kind of information drift that fails to keep

account of the uses to which information might have to be put" (Bruner 1962).

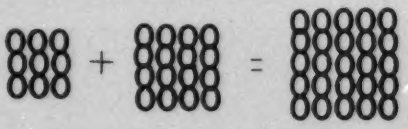
Piaget's investigations have shown us that the reason it takes children so long to recognize simple logical rules is precisely that these rules are not "out there," but must be constructed from the activity of the child himself (Flavell 1963, Furth 1969, Piaget 1971). The adolescent we now have in therapy or in the remedial class may not have been able to construct the rules from earlier instruction and may, therefore, still need concrete experience as a basis for his development of logical thinking in mathematics.

Thus we have begun, even with an adolescent, at what Bruner has called the *enactive* level. Bruner describes the child as progressing from this level, where he manipulates materials directly, to the *ikonic* level, where he deals with mental images of objects, and then to the *symbolic* level, where he is able to manipulate symbols without mental images of objects (Bruner, et al. 1966). Careful structuring, organizing and sequencing enable the dyslexic adolescent to make this progression rapidly because, though still needing some concrete experiences initially, he has reached a stage of cognitive development where he can deal with abstractions.

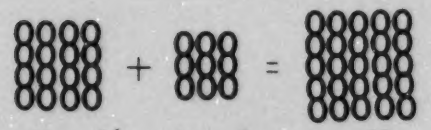
But in our beginning work, we have allowed for still another need. By choosing, for example, to work with exponents first to demonstrate the law of inverse relationship, rather than with addends, we accomplish even more than we have discussed above. First, we have avoided placing the adolescent in what he might consider a humiliating position, "first grade" arithmetic. Secondly, we have recognized that the adolescent is developmentally different from the young child in his cognitive operation. This is a tacit communication of great importance to him since it is in the initial stages of instruction that old feelings of inadequacy must be overcome and the student challenged intellectually even while he works at an elementary level. And finally, we have provided a basis for understanding other properties of mathematics as will be shown below.

For example, very quickly he can move from $3^2 + 4^2$ to $(3^2 + 4^2)$ to 5^2. In this process, he sees that 5^2 equals 25, and he also begins to recognize the commutative principle. $3^2 = 9$, and $4^2 = 16$, and $9 + 16 = 25$, and $16 + 9 = 25$, and $25 = 9 + 16$, or $16 + 9$. Since he has also been discovering how to find the square root, he now knows that $\sqrt{25}$ is 5. Having rearranged the sum of the products of 3^2 and 4^2, he can deal effectively with the following expression:

$\sqrt{3^2 + 4^2} = y; \quad y = ?$



9 + 16 = 25



or 16 + 9 = 25

$\sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5. \quad y = 5.$

Verbalization accompanies the visual-motor, concrete operation as it is transformed into its symbolic expression. The notations are done in the student's mathematics notebook so that he will work on ruled lines and will also be able to review or refer to it when necessary. No short cuts are permitted from the very beginning. The student must write out each step in the thought process, using the appropriate notations as illustrated above so that he will become accustomed to working carefully in a sequence of operations. Manual manipulations continue, however, only as long as necessary.

As soon as he is able to do so, the student moves from the physical manipulation of materials to the non-symbolic stage of visualization through the use of drawings that represent numbers or sets or relationships. And finally, he is able to work with symbols alone. By this time, however, he has learned enough about himself and his problems so that "when in doubt, draw it out" is an accepted method when he cannot manipulate symbols alone.

There are several reasons for introducing literal numerals early, as may be seen in the illustration above, and working with them as much as possible. First, literal numerals emphasize concept rather than the quantitative aspect of numbers so that the student can maintain his focus upon laws and relationships. Secondly, using a new system of notation helps to overcome the lingering distaste carried over from earlier arithmetic. And last, but not of the least consideration, our goal is to prepare the student to make the transition into high school mathematics without new trauma when he encounters its "language."

Some of the new language he will need is illustrated below as we use

it in even the earliest stages of our remediation. Each new word, as it is introduced, undergoes careful analysis of syllabication, word structure and meaning. When practice is assigned in a textbook, the student learns to apply language therapy techniques in phrasing problems expressed either in words or symbols (Ansara 1972). A few examples follow, accompanied by the written work.

Substitute: $x^2 = 49$.

$\sqrt{49}_{7}$ $x^2 = 7^2$

$7^2 = 49$

Solve for x: $x^2 = 49$.

$\sqrt{49}_{7}$ $x = 7$

Solve for n and express n in exponential notation. Show each step.

$$\left(\frac{10^2 \cdot 6^2}{36}\right) \times \left(\frac{10^2 \cdot 5^2}{25}\right) = n.$$

Simplify $\left(\frac{100 \cdot 36}{36}\right) \times \left(\frac{100 \cdot 25}{25}\right) = n.$

Remove parentheses $100(36) = 3600$

$\frac{3600}{36} = 100$

$100(25) = 2500$

$\frac{2500}{25} = 100$

$100(100) = 10{,}000$

$10{,}000 = n$

$10{,}000 = 10^4$ $n = 10^4$

Solve for t and find the square root of t.

$t = (\sqrt{100}) + 71.$

$\sqrt{100}_{10}$

$10 + 71 = 81$

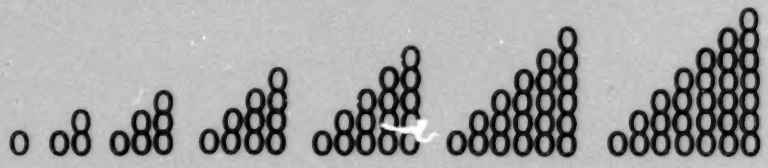
$t = 81$

$\sqrt{81}_{9}$

The square root of t is 9.

It may be useful to offer one more illustration, using as an example the dyslexic adolescent who has not yet mastered the multiplication tables or gone much further than simple addition and subtraction. In past attempts with arithmetic, the student has usually not known when he was incorrect in a solution, or the cause for an error. His efforts with division may have been especially painful. Understanding and learning the prime numbers can, in this case, provide the beginning of training for self-monitoring.

But before discovering the prime numbers, the student might benefit from investigating interesting patterns or properties of numbers. He has already worked in squares. What might be discovered about triangles? The sets below are presented.



Can the student now draw the next triangular number, and the next? What are the patterns that he sees? Can he begin to predict the sum of the set of positive whole numbers in the new triangular set? Does he see the pattern of: 3, 6, 10, 15, 21, 28? Can he also recognize another pattern: 3; $3 + 3 = 6$; $4 + 6 = 10$; $5 + 10 = 15$; $6 + 15 = 21$; $7 + 21 = 28$; $8 + ? = ?$; $9 + ? = ?$. Other discovery games can also be used in preparation for his learning prime numbers (Friend 1961, Heath 1953, Meyer 1952).

Prime numbers can be introduced through the use of the Sieve of Eratosthenes, a Greek astronomer and geographer of the Third Century B.C. A number square of 1 to 100 is given to the student and, using his multiplication reference chart, he is asked to observe what happens as he crosses out certain multiples. The goal is to have the student arrive at an understanding

of *prime numbers* and *composite numbers*. When he does arrive at this understanding, he should be able to offer the following definitions:

> A *prime number* is a number with exactly two factors, itself and one, and only two factors.
>
> All other natural numbers with more than two factors are *composite numbers*.
>
> The number *one* is not prime because it does not have two factors.

Work begins on the Sieve with the crossing out of one, since that number is neither prime nor composite. Two is circled as a prime number since that is the first one encountered that can be factored only by itself and one. All multiples of two are then crossed out and it becomes obvious that all even numbers except two must be composite numbers and can be factored. Three becomes the next prime number to be circled and multiples of three are then crossed out, and it then becomes apparent that there is a multiplication "chain" resulting from the multiples of two and three so that many even numbers are already crossed out. There is also the discovery that multiples of four and eight all have two as a factor and are even numbers, as are multiples of six and ten. He realizes that multiples of six are divisible by two and three, and that multiples of nine are also multiples of three. He continues with the crossing out of multiples of five and seven with one further discovery, that any number ending in five or zero has five as a factor. The other prime numbers under 100 are similarly identified. He then enters the prime numbers into his notebook and refers to them until they are committed to memory through use.

The student is now ready to factor, to begin to work systematically to overcome his prior difficulties with multiplication and division. Such work is carried out on graph paper or in the notebook to avoid errors due to spatial organizational problems. Selected chapters or pages from a number of textbooks are used to provide the necessary practice. (A few mathematics texts are included in the bibliography.)

This paper is merely an attempt to indicate an approach to developing *basic arithmetic* skills in the dyslexic adolescent who is in need of remediation. It is not possible, of course, to cover a complete curriculum. But it may be useful to cite a couple of cases of severely dyslexic students who were able to benefit greatly from this approach while also in language therapy. (The names of these two students have been changed.)

CASE 1. BOBBY. C.A. 13 YEARS, 2 MONTHS

Bobby was examined at the Cortical Function Test Laboratory of the Massachusetts General Hospital. His performance on the *Wechsler Intelligence Scale for Children* indicated general mental ability as "average" with Verbal IQ of 97, Performance IQ 93, and Full Scale IQ 95. Bobby did comparatively well at abstracting similarities; vocabulary was average; and general information was relatively limited, although this score may have been due to his inarticulateness. Mental arithmetic reasoning was spotty and there were some operations that he could not even attempt. Auditory span for digits was average, 5 forward and 5 backward, but he abruptly reached the limit of what he could retain. He showed good observation about essential details missing from pictures. He gave up on block designs and did not assemble puzzle pieces as readily as might have been expected in view of other performance. He did extremely poorly for his age in coding and worked at a very slow rate.

On an untimed test of reasoning by analogy to complete perceptual patterns, his performance for his age was rated as average. He had difficulty, however, with copying the Bender Gestalt figures.

Academic achievement tests showed a number of problems in reading, spelling, and writing. Bobby scored at grade 5.7 in oral reading; grade 3.8 in paragraph meaning in silent reading; and at grade 4.7 in spelling. He was unable to score in arithmetic computation, attempting only a few items with none correct.

Testing, combined with clinical findings, suggested a degree of dyslexia complicated by a "very strong overlay of poor educational procedures." These procedures including switching him from his left hand to the right during fourth grade.

Bobby had encountered problems with reading and writing in the public school which he attended from kindergarten through the second grade. At that point, he was transferred to a small private school which closed when he completed the fourth grade. He was then enrolled in a newly opened school which provided an open structure and was based upon the philosophy that children would learn whatever they needed when they were sufficiently motivated to do so. Bobby, in fact, did very little in his years there and became quite hostile toward school and toward adults in general. That he was indeed motivated to learn became apparent when, *at Bobby's request,* the

family sought a new school for him. The clinical evaluation was recommended prior to acceptance at our school as a special student.

Our work with Bobby confirmed the diagnosis of dyslexia, but we believe his performance on the WISC may have been very much influenced by an emotional overlay. He has given us ample evidence of a potential capacity considerably higher than testing indicated. The testing clinician had noted his hostility and had in fact raised some doubts as to the reliability of the IQ scores. The academic achievement test results do seem to have been reliable.

By the end of his first school year with us, Bobby was able to score grade 9.8 on the vocabulary section of a silent reading test, and he reached grade 10.4 on the comprehension section; both scores were achieved well within the time limit. A dictated spelling test placed him at grade 6.9. He also learned to write but not with sufficient ease because of his severe dysgraphia. The year of tutoring in math, using the approach already indicated in this paper, prepared him for high school mathematics. At the beginning of his second year with us, he was accepted as a regular ninth-grade student in a college preparatory curriculum. During this second year, he completed successfully first year algebra. He has now transferred to his local public high school.

Bobby still has many emotional and social problems to overcome, but his academic problems are no longer the focal point. We are hopeful that his energy can now be directed toward a further increase in self-control and toward developing the social life that he looks forward to in his new school.

Case 2. Dan. C.A., 16 years, 8 months

Dan, at 16 years and 8 months, refused during Christmas recess to return to the private, residential school for children with learning disabilities which he had attended for three and one-half years. Prior to entrance to that school, he had attended a private, remedial day school, and summers had been spent at a residential camp for children with learning disabilities.

Dan's scores on the *Wechsler Adult Intelligence Scale* were Full Scale IQ 105, Verbal IQ 102, and Performance IQ 108. He was high average on comprehension but "spotty" or just average or below average on school-related tasks such as vocabulary, mental arithmetic, and information. He

showed some confusion in spatial orientation in reproducing block designs. Although very slow, he was efficient on coding, with no errors.

Dan's oral reading grade was 3.2 and in silent reading on a primary level test, he scored only grade 3.8 in word meaning and grade 3.2 in paragraph meaning. He was able to score grade 5.9 in arithmetic computation on an intermediate test, but with 24 percent error. This testing took place at Massachusetts General Hospital as a clinical evaluation was deemed desirable before considering Dan's application for admission to the school.

The clinical diagnosis was a "classic case of profound specific language disability in a boy of 'average' intelligence." Dan was accepted for entrance at our school in January, and he was placed in a program which combined some classes with tutorials. By the following September, Dan was able to take a full program with very much reduced tutorial assistance. He has now successfully completed intermediate algebra and, after two and one-half years of high school work, including two summers, lacks only three credits toward his high school diploma. The option to continue with further education after secondary school is now available to him.

Bobby and Dan are only two of many possible examples of the need for therapy that goes beyond the language problem in dyslexic adolescents. Indeed, we might venture to say that all dyslexic children should be considered at high risk in arithmetic and later mathematics until their performance in school has demonstrated otherwise. We are well aware that confusions with letters, such as *b* and *d*, and word rotations as in *was* and *saw* can hinder a young child's progress with reading. We know that poor visual memory or auditory discrimination problems or a dysgraphia can prevent a child from learning to spell and write. Similar, observable problems occur with arithmetic.

Orton's 1925 paper on "Word-Blindness in School Children" set the course for the past fifty year's work in the diagnosis and treatment of specific language disability. Perhaps now it is time to turn our attention also to those dyslexics who have a specific mathematics disability and develop the insights and knowledge that will lead to early identification, prevention and remediation.

Perhaps, also, we should be encouraged to work more with the dyslexic adolescent when we realize that, despite his language disabilities, he is quite capable of higher level cognitive functions and symbolic thought.

Appendix A

CASE 1. Some examples of work correctly completed on term examinations during the year of remediation in preparation for high school mathematics.

Taken from the December term examination:

Write the prime numbers below 20.

Give the factors for each of these numbers—12, 18, 21, 24, 27, 36, 45 and 72. Do not give 2 as a factor.

Find the products:

$$\begin{array}{r} 1275 \\ \times\ 83 \\ \hline \end{array} \qquad \begin{array}{r} 1102 \\ \times\ 59 \\ \hline \end{array}$$

Find the sums:

$$\begin{array}{r} 5600 \\ 4872 \\ 7084 \\ 1857 \\ \hline \end{array} \qquad \begin{array}{r} 1657 \\ 503 \\ 217 \\ 1933 \\ \hline \end{array}$$

Find the differences:

$$\begin{array}{r} 279 \\ -\ 163 \\ \hline \end{array} \qquad \begin{array}{r} 480 \\ -\ 249 \\ \hline \end{array} \qquad \begin{array}{r} 1265 \\ -\ 394 \\ \hline \end{array}$$

Find the quotients: $2765 \div 35$; $8277 \div 89$.

The sum of 22 and 27 equals x^2. *Solve for* x.

$\frac{1}{2}$ of y equals 5^2. *Solve for* y.

$77 - 8 = z^2$. *Solve for* z.

Express as exponential numbers: $3 \cdot 3 \cdot 3$; $10 \cdot 10 \cdot 10 \cdot 10$; $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$.

Write true or false for the following sentences.

$(8 - 5) \cdot 4 < 9 + 8$. $\qquad (16 \div 2) + 1 = 10 - 1$.

$(18 \div 3) + 4 > 9 - 5$. $\qquad 5 \cdot 3^2 = 9^2$.

Write the simplest name for each of the following:

$\sqrt{144} \qquad \sqrt{625} \qquad \sqrt{100 - 36} \qquad \sqrt{29 + 7}$

Use the symbol $\sqrt{}$ *to write a name for each of the following:*

5 $\qquad$ 13 $\qquad$ 29 $\qquad$ 18

Solve:

$t^2 = 400 \qquad n^2 = 900 \qquad r^2 = 1600 \qquad z^2 = 10{,}000$

Give the square roots for the following.

$\sqrt{2500} \qquad \sqrt{4900} \qquad \sqrt{6400} \qquad \sqrt{3600}$

Complete the following statements:

$(\sqrt{64} + 4) \cdot (3 + 1) =$ _____

$(5^2 - 5) + \sqrt{100} =$ _____

$(21 + 28) - 7^2 =$ _____

Solve for x when $\sqrt{100} + 71 = 3^2 \cdot x$.

Change to mixed numbers: $\frac{12}{5}; \quad \frac{17}{3}; \quad \frac{20}{13}; \quad \frac{25}{20}$

Change to improper fractions: $1\frac{9}{16}; \quad 3\frac{7}{20}; \quad 11\frac{3}{4}; \quad 9\frac{5}{6}$

In the following additions, change to a mixed number if the result is an improper fraction. Make sure that you use the lowest common multiples and that you give the lowest possible denominator in your answer:

$$\frac{5}{8} + \frac{2}{3} \qquad \frac{5}{6} + \frac{3}{5} \qquad \frac{5}{12} + \frac{6}{18} \qquad \frac{3}{4} + \frac{2}{3} + \frac{7}{12}$$

$$1\frac{5}{9} + 3\frac{7}{12} + 5\frac{5}{6} \qquad \frac{5}{8} + 3\frac{3}{16} + 5\frac{5}{8}$$

Change to decimal fractions:

$1\frac{5}{10} \qquad 6\frac{75}{100} \qquad 29\frac{67}{100} \qquad 5\frac{340}{1000}$

Word problems on this December examination included finding averages, perimeters, and square area. Two word problems required graphs, a pictograph and a line graph.

The second term ended in March and the examination covered an introduction to geometric concepts and terminology as well as the additional arithmetic skills that had been taught. Mathematical thinking had also progressed as may be seen in the following, taken from the March term examination:

In $\frac{a}{b}$ and $\frac{c}{d}$, *if* $a \cdot d = b \cdot c$, *then* $\frac{a}{b} = \frac{c}{d}$;

if $a \cdot d > b \cdot c$, *then* $\frac{a}{b} > \frac{c}{d}$;

if $a \cdot d < b \cdot c$, *then* $a < c$.

Use cross products, as illustrated above to compare these fractional numerals:

$\frac{1}{8}$ and $\frac{2}{4}$; $\frac{20}{24}$ and $\frac{15}{18}$; $\frac{6}{7}$ and $\frac{9}{11}$; $\frac{9}{10}$ and $\frac{18}{20}$.

The year-end final examination showed not only an ability to think mathematically but also competence in arithmetic operations. A few examples from that examination are given. Space does not permit giving examples of the word problems or of the introductory geometry.

Express the following in decimal numerals and solve:

$$\left(6 \times \frac{1}{10}\right) + \left(7 \times \frac{1}{10^2}\right) + \left(5 \times \frac{1}{10^3}\right) + \left(2 \times \frac{1}{10^4}\right)$$

Solve: $100.12 - x = 100.008$. $x = ?$

$8.45 - 7.405 = y$. $y = ?$

Find the products: $.3245 \cdot 10^2$; $.8309 \cdot 10^3$; $.0380 \cdot 10^4$.

Find the quotients: $723 \div 10^5$; $.018544 \div .0061$.

Find the sum of: $216.2 + 38.51 + 61.417 + 402.3 + .103$.

Find the differences: $.346 - .0346$; $24.47 - 8.33$; $48.76 - 42.36$.

(The percentage tasks were in the form of word problems.)

Appendix B

CASE 2. This student was able to move quite rapidly from his fifth grade achievement level in January into an introduction to traditional algebra. The problems below are taken from his final examination for the year in June.

Find the value of $2.4xy$ when $x = 4.6$ and $y = 6.25$.

If $x = 2$, *find the value of* $3x^2 + 2x - 5$.

Collect:

$5a - 7a + 6a + 8a - 10a$

$5x^2 - 4x + 8x + 3x^2 - x$

$10x^2y - 8x^2y^2 + 6x^2y - 3xy^2 - 5x^2y + 4xy^2$

Find the sum of:

$(3a - 6b + 7c) + (5a + 2b - 8c) + (-a - 3b + 4c)$.

Subtract the sum of $(21x^2 - 18xy + 14y^2) + (3y^2 + 15xy)$ from the sum of $(9x^2 - 36y^2) + (5xy + 10y^2)$.

Solve the following equations:

$$8x - 9x + 4 + 7x = 4x - 8;$$
$$3y - (y + 8) = 0;$$
$$x - 3 = 8 - (x - 7) - x.$$

Perform the indicated operations: $\frac{x}{3} \cdot \frac{6x}{7}$; $5ax \div ax$;

$(-x^2y)(-xy^2z)$; $-56a^6b^4 - 7ab^3$.

Factor:

$$48r^2 - 27s^2$$
$$4(b^2 + a^2) - 9(c^2 - d^2)$$
$$25a^2 + 60ab + 36b^2$$
$$18ax^2 - 12axy + 2ay^2$$

Divide:

$$\frac{2x^4 - x^3 - 9x^2 + 29x - 21}{x^2 + 2x - 3}$$

Solve:

$$2(x - 5) - (7 - 3x) = 3 + 3x.$$
$$.5y + 1.8 = 2.6y - 8.7.$$

This student was also able to handle competently the typical word problems of traditional first-year algebra as the following will illustrate:

Four years ago, Ann was twice as old as Ruth, and Sally was one year older than Ann. Six years from now, the sum of their ages will be 51 years. Find their present ages.

A man has $12.00 consisting of nickels, dimes and quarters. There are 8 more nickels than quarters, and the number of dimes is 10 less than twice the number of nickels. How many coins of each kind are there?

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Semantics$_{1973}$—Diagnostic Categories: Their Use and Misuse

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Dyslexia—a diagnostic label. Do labels matter? They do indeed! Does that mean we should stop labeling? Of course not. But we can obey the injunction, "Be careful how you put your foot in that pie, Epaminondas!"

We *can't* stop labeling for the very basic reason that every word we use is by, its very being, a label. It is a label for an event in the largest sense—for a "person, place, thing or idea" (the nominal function), for an action or state of being (the verbal function), or it is a qualifier of either the nominal or verbal experience (the adjectival or adverbial changer of the original label), or a relational label which gives structure to the whole edifice of labels (their prepositional and conjunctional status in the thoughts to be conveyed). That is, a word in an utterance is a functional part of speech which refers to a meaning. What's wrong with that? It's built in, a "given" of language *as Language*. Ancient and modern philosophers and grammarians have been saying this since Greece and Rome, and probably since Phoenecia and Egypt or whenever we date the dawn of man's self-consciousness.

Back in the twenties and early thirties Korzybski, the founder of general semantics, writing his *Manhood of Humanity* and his *Science & Sanity* gave us several new and mind-catching formulations of ideas which had by that time often got stuck in the nominalism vs. realism controversies of Philosophy 101. He pointed out, in the first place, that "The word is not the thing," nor is the map the territory. They merely point to experience of some kind. However specific or general the abstractions they make from reality, no one nor any combination of them, in the very nature of the case, can tell *all* about that which is signified. In the first place, neither sender nor receiver of the message can *know* this *all*. Even if they could, the word which refers to the experience must abstract or leave out aspects of reality in formulating it into a verbal indicator. Furthermore, try as we will to capture reality in our verbal snares, it is like the Irishman's flea, "When you put

your finger on him he isn't there." Time passes, second by fleeting second and year by inexorable year. Sometime just try saying everything about a single moment of experience—let alone your stream of consciousness!

Again to quote the Greek, one never can step twice in the same river, both because the river changes and because the foot with which we enter it is different. And yet, there is continuity, too, for it is still *my* foot (or yours) and the *St. Laurence* River (or the Columbia). Like Christopher Robin's

> . . . stair where I always sit
> There's no other just like it.
> It isn't up, it isn't down.
> It's not in the nursery,
> It's not in the town . . .

It's himself alone, whether "very young," "now . . . . six," or an old man, and a very precious identity it is, of history and future, of joys to be savored and problems to be solved. It bears his name and is the vehicle for his part of the stream of human life.

"But what," you ask, "has all this to do with the term dyslexia? Dare we use this label? What do we commit ourselves to if we do? Is it useful? To whom? How?" Just to ask these questions brings so many half-answers or other comments, and such a tumble of thoughts into mind that one despairs of even making a beginning of discussing them. Is it worth the effort? I am reminded of an examiner's six-page report I once saw purporting to describe a non-reading 6th-grader, telling all the specific things he couldn't do and worrying each sub-sub-component skill as if it were the puppy's slipper—all in the worst jargon of the trade. I stood it as long as I could, then flung the report down saying "What you mean is that this bright boy can't read. Well, for Heaven's sake, shut up and teach him!" That was an exasperated, unreasonable reaction, of course. The psychologist was doing his best to translate this living, breathing, squirming, spitball maker into terms the ivory tower could understand. He was *trying* (even if he was, the while, also *very* trying!) to describe without labeling; but, Willy-nilly, he had gotten himself lost in a maze of labels about labels about labels with less and less connection between concepts and boy, as the paragraphs went on.

Should we, then, stop using words to epitomize descriptions? No, we should learn to do it with more understanding and, *hence* (note that *hence*), clarity.

It is not the number of words one uses, either. If any of you have read my recent essay into this field, "Language Learning Differences in Plain

English," you'll find that the Plain English description of Alfred and his difficulties took about 3600 words of common speech, while the same subject was *for you*, summarized in only 307 words. The terms of the 307-word description were somewhat technical, but they were not jargon because they were directly equivalent in scientific shorthand, as it were, to the earlier words into which they had been translated. The label "dyslexia" frightened Al's mother in this account because the examiner used it without asking her to read the paper first! It sounded like jargon to her—pretty alarming jargon —like a dread, incurable disease with which she and her husband had saddled their son.

Did it "make him different"? Should he be banished for four more years to some special class or track to emerge as the proverbial ditch-digger? (Have you, by the way, watched a mechanical digger and back-filler lately? What price the human ditch digger now?) "No, no! No segregation," say you in 1972. "Let's keep him with his peers, so he won't feel 'different' and 'a dummy.'" It's not that easy. Do you know what it's like to sit in a class of your agemates and not be able, no matter how hard you try, to do what most of the others, even some of the dimwits, do with such apparent ease? Are you *different?* Sure you are! Is that (and so, *are you*) *bad?* You know you're still not reading and you have already known shame.

But is it the labeling that's bad? Or the differential treatment? Labeling is bad only when we categorize the whole child by one presenting problem and think, "That child *is a* dyslexic," as if his identity and this problem were each inclusive of the other. "He's a dyslexic (or Big Ears or Skinny) and that's *him*," no more, no less.

In teaching children about other languages and cultures one can say, "This *is* a pencil! the Germans *call* it *Bleistift*; the French *call* it *crayon* and all the other people *call* it all sorts of other strange things, but there's no getting around the *fact* that it *really is* a pencil!" On the other hand, we can say "Look what this does. See what it's made of. *We call* it a pencil; the Germans call it . . . (and so on) but if you want to know what it *is*—use it. If I want you to give it to me I'll ask you for the *pencil*, because we're speaking *English* . . . (and so on)." *And it really does matter.* We are making linguists and semanticists, not zenophobes—or at least that's our aim.

Probably no one would deny the existence of an area of experience which we can perhaps objectively describe as differences in ways people learn language skills. You have some such interests or you'd be skiing or playing bridge instead of reading this. Probably, too, you'd mostly agree that this is

far from a simple situation. The advantage of using just one term—like dyslexia or specific language disability—if we can agree on one, is that it saves lots of other words of explanation, many themselves of inexact meaning. But you know what a sea of troubles these terms get us into! Let's see if we can swim out.

In the first place, no matter how important, and sometimes all-pervasive, is language learning, it is still only one dimension (or group of dimensions) of a person's life. Lets "shoot at sunrise in the schoolyard," as Jean Symmes would say, the common practice of summing up a chid as "He's *a* dyslexic"—or *an* E.H. or *an* S.L.D., or whatever. Though he may have a problem severe enough to crowd all else from his consciousness, he's a lot more than just a human body wrapped around a problem tied up with a knotted rope of symptoms.

If you must, he is David Doe, who has a problem we've agreed to call dyslexia, or S.L.D. or even hyperplexia. Now what shall we—and he—do about it? We shouldn't categorize *him*, though it may make excellent sense to categorize, and to refine our descriptions of, *his problems* since, first, this increases our understanding and, second, it tells those of us in the field what to do.

Of the many dimensions on which David lives there is the one of verbal language—heard, spoken, read and, written—all to be understood. At one pole of this dimension is, if you will, *eu*lexia. If that's where he functions, all's *well* (eu-) with his *word* mastery(-lexia). But if he's at the *dys*-lexia end, something is seriously *ill* (dys-) with his *word learning* (-lexia). Or he may be, as most of us are, somewhere in between. You may place him where you will, and color him as you like, with visual-red, auditory-green, or the whole rainbow. You know how varied are these children (and adults) and even how different is David-today from David-yesterday and David-tomorrow.

Don't get me wrong. *David* is continuingly real ("Let me take care of that slingshot till after school, Dave, will you?") and so is the form of dyslexia which makes trouble for him. *I* like even to *call* it *dyslexia* for that says to me that there's something or other wrong between Dave and his mastery of words, and it's *that* which is troubling him, not mental retardation, emotions, deprivation at home or at school, or whatever else. It is probably a mismatch between his constitution and the school's teaching which may be okay for many other children. David's situation is complex, almost unique, but there's an identity in it, too. If we give him a therapeutic climate and a

skilled, flexible teacher and present the language in a way which is, in the words of Dr. Lucius Waites of Dallas, Texas, "multisensory, structured, systematic, sequential, cumulative, and thorough we can teach him skills adequate to his intellectual and social needs whatever their level, and help him taste the joy of mastery and the enthusiasm that goes with using human language."

That's what dyslexia means *to me*. It is a denotative and operational term. But I won't use it with you if it is a snarl-word or a dust-bin word for you. And maybe we'd better use something else with people generally anyway, lest they impute meanings we don't intend.

I'd be ready to substitute, as an alternative, more concrete formulation perhaps, something like this: "No two people are just alike, though they do have similarities which enable us to group them, if we do it carefully and only with specific purposes in mind. One way people are different is that they learn things, like language, in different ways. 'One man's meat is another man's poison,' here, too. We aim, for everyone, at his attaining rapid, smooth, automatic mastery of communication skills so he can listen and read, speak and write without always thinking how he's doing it—free to keep his mind on the message. Some people will do this no matter how you teach them; some do well with the usual school methods of the 1970's. However, there is a larger group than you may realize who learn best, or often can learn only, if they can have an approach which uses all the sensory paths to learning—vision, hearing and motor—and is structured, systematic, sequential, cumulative, and thorough. I know this works because I have almost never seen it fail in 37 years of practice, and I know many others who have had the same experience."

I don't really care what you call all this, though of course I hope we can avoid the wasted energy and worse that comes from hangups over word usage. One thing, however, that I think is most important is to distinguish between putting a *problem* in a category because it helps us understand its nature, ramifications and treatment, and putting a *person* in a category because one aspect of his current life is tied up with that problem. Let us keep the person whole, with all the attention on the problem that it needs but with David, himself, as a self, and in perspective.

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PERSONAL AND SOCIAL STUDIES

1. Severe Reading Disabilities: The Family's Dilemmas

Carl L. Kline and Carolyn Lacy Kline

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Surprisingly little has been written about the psychodynamic interplay within a dyslexic's family, and between his family, his school, and his society in all their various roles. We know that in all families parents have normal needs to be "good parents" in their own and others' eyes, and to have children who are healthy, reasonably well-behaved, and at least normally successful in school and in society. In addition, because of his or her own personal conflicts, any parent may have neurotic needs which can affect the parent-child relationship. Either or both parents may be unrealistically perfectionistic in demands on their own behavior or on the child's behavior and achievements, even sometimes becoming unsensitively or sadistically punitive, or projecting their own feelings of inadequacy on the child as a "scapegoat."

These and other aspects of family dynamics in general have been much discussed, but very little has appeared in the literature which is specifically related to the complicated, never passive, often explosive, interrelationships between the dyslexic child and all those relatives, friends, and non-friends with whom his world is peopled. Have doctors and other professionals opted for the easy way out, reluctant to involve themselves in what often becomes open warfare between adversaries—perhaps parents versus child, or parents versus school, or parents versus law-enforcement agents? Do we perceive the problems that arise from a dyslexic child's inability to fit into a traditional educational program as somehow too threatening to the whole system, a system already plagued by general distrust and discontent and consequently too controversial for comfort?

Learning Disabilities as Threats to Families

Families, like individuals, have difficulty in maintaining homeostasis, a steady balance, when confronted with a prolonged conflict situation or frustration. When the problems are especially complex or controversial, equilibrium is further threatened. The ecological balance in many families is so precarious and fragile that even a minor crisis creates serious disturbances. Malfunction of any member of the family may disrupt the intricate communication system in that family. The more misunderstood or poorly defined the problem is, the more confused and inappropriate are the responses likely to be. Family coping mechanisms are further strained when conflicting diagnoses and recommendations are offered by a wide variety of diagnosticians representing many different disciplines.

Learning disabilities *do* present multiple threats to families. Academic success is high on the priority list of most parents. Family attitudes and responses help to determine their child's level of aspiration and the child's response to underachievement. Generally the assumption is made, by parents and by schools, that the child who tries hard automatically will learn to read and to spell. The child who fails in these basic skills often starts a chain reaction in his family, a reaction that tests the strengths and the weaknesses in that family's dynamics.

A fourteen-year-old boy in grade nine recently was seen by us for psychoneurological evaluation. He had had a history of academic difficulties and failures since grade one. Both parents expressed anger and disgust with the boy, emphasizing his being "lazy" and "a professional liar." They expressed their deep resentment over what they considered to be his manipulative patterns of behavior, stating that he had the entire family in an uproar. The parents complained that he already had been in minor trouble with the Royal Canadian Mounted Police, and that he now was having a highly destructive influence upon their two younger children. Both the mother and father admitted that they fought constantly about how to manage the boy's behavior. The mother accused the father of being too rigid and punitive. The father said that his wife was overly permissive and inconsistent. Both parents admitted that they were seeking professional help for only one reason—sanction for their desire to send the boy away to military school.

Examination revealed that this boy suffered from severe developmental dyslexia. Despite *above* average intelligence, he was reading and spelling more than four years behind grade level. The boy's extensive distortion of the truth

(labelled "professional lying" by the parents) was a defense against the parents' lack of understanding and their unrealistic expectations. These defenses served a dual role in that they also cushioned him against self-recognition of the severity of his many academic and social failures.

The school, too, had become part of the struggle because of its failure to identify the boy's problem and thus to offer meaningful help. Instead, the school staff saw him as a behavior problem and thereby entered into a punishment-oriented pact with the parents which was, in effect, destroying the boy. Although the parents had taken their son to a psychiatrist when he was nine years of age, they had withdrawn him from treatment quickly, because, as they said, "the doctor believed his lies" instead of the truth—as perceived by them. The family centered their conflicts around the son, this fourteen-year-old boy with the undiagnosed specific learning disability. While his dyslexia continued unrecognized and untreated, the parents, the siblings, and the school all were pushing him ever-deeper into an emotional quagmire. A real crisis existed in his life, as well as in the life of the family. Unfortunately the parents were not able to accept the diagnosis and treatment plans suggested, preferring to continue their search for the boy's ticket to a boarding school. Although we have not had a follow-up report, our educated guess is that this misunderstood, mishandled, angry boy, is headed, not for a boarding school, but for a so-called "correctional institution."

In contrast to this boy was another fourteen-year-old boy who also had severe developmental dyslexia. However, this youngster was fortunate enough to have a well-integrated, supportive family. Their emphasis was upon getting help for him, but their difficulty was in finding anyone to define the problem in a meaningful way. In fact, for years they had not been able to find anyone who would perceive the boy as they did: a basically sound, intelligent, warm, delightful youngster who had a remarkably poor memory for words and letters. His spoken language at times had a confused pattern like that which broadcaster Pat Paulson utilized to advantage in his scrambled T.V. editorials of several years ago, a characteristic that further labeled this boy as different. Although highly intelligent, he was five years behind grade level in reading and in spelling, and had spent several years in "special classes." Although his self-image had suffered considerably from these years of frustration, failure, and humiliation, he remained relatively intact emotionally, thanks to the warmth and understanding of his family. Once the diagnosis was made of a specific disability in language, he was able to receive individual alphabetic phonic-multisensory help from a private Gillingham-oriented tutor. His school

cooperated, sceptically at first, but with growing approval for the program. This boy, who had been told that he was not academic material and should head for vocational school, is now doing well in a university. His mother recently wrote to us to say that instead of thinking in terms of becoming a mechanic, Jack is now wondering if perhaps he might qualify for medical school.

As demonstrated by the two cases just described, a child's *reaction* to his reading disability is determined by his emotional makeup, the family dynamics, and the attitudes of the school personnel. A mature, stable family which is supportive, understanding, and firm in its determination to provide meaningful help for the child, enables that child to maintain a relatively intact ego despite the disturbing effects of chronic underachievement. It has long been recognized that the more intelligent and sensitive the dyslexic child, the more likely he is to suffer and the more he needs emotional support.

Reading Difficulties Secondary to Family Conflicts

Families which are handicapped by serious parental conflicts or by family psychopathology often have children who suffer with emotional symptoms. Contrary to popular belief, these children are not especially vulnerable to developing *primary* reading disabilities. True, the child who is so highly disturbed emotionally that he cannot sit still in school and cannot concentrate when he tries to study, may develop a reading disability secondary to the emotional stress. However, it is equally true that many children from disturbed families find school a happy escape from the home situation and turn their energies to learning. Those of you who enjoyed reading "A Tree Grows in Brooklyn" in the 1930's will recall the little girl who read every book in the library starting with the first book on the top shelf in the "A" section.

Unfortunately fragmented or dissociated families often "scapegoat" the child who has any kind of learning disability. Emotionally disturbed family members may use the child as a target for their own unresolved guilt feelings and hostility. Sometimes a parent with deep-seated, unresolved hostility will express these feelings through punitive or vindictive behavior toward the underachieving child. The child with a severe reading disability who receives little understanding, often coupled with punitive or wildly inconsistent behavior, is likely to manifest serious acting-out behavior. Because they do

not understand the nature of the child's problems, parents sometimes attribute the child's academic underachievement to laziness or stubbornness.

In the past, girls who were treated in this way were more apt to develop depressive reactions or to withdraw emotionally. More recently such dyslexic girls seem increasingly to emulate their male counterparts and strike back at society with anti-social behavior, sometimes very vigorously. Perhaps this is an inevitable by-product of the growing equality of the sexes. Although certainly the socially disruptive response is undesirable from society's viewpoint, it does have the merit of calling dramatic attention to the plight of these girls in a way that quiet withdrawal seldom has done.

Emotional Aftermaths of Reading Difficulties

A child from a well-integrated family who has appeared to be bright and responsive through his early years and who then fails to learn to read in grade one may disappoint the most understanding and compassionate of parents. The child senses this disappointment and is likely to feel bewildered and dismayed. Often he is told at school, as he is placed in the lowest reading group, that he should try harder because he is a bright little boy and *can* do the work once he settles down to it. This is most embarrassing, frustrating, and puzzling to the child who has been trying desperately to learn to read. Additional humiliation often is suffered at the hands of his friends who call him "dum-dum" or "retard." Well-intentioned but inappropriate attempts by the parents to get the child on the road to reading often backfire by creating even more difficult family tensions.

The mother of one patient remorsefully recalled how the grade two teacher vowed that she would "teach that child to read or else!" She managed to involve the mother in her efforts by directing her not to read to the child, even at bedtime, thus depriving him of what had been a very warm and reassuring highlight of his day. The teacher perceived the child as being unwilling rather than unable to read, and thus she reasoned that if he had no one to read to him the stories that he so dearly loved to hear, he would start to read them himself. She became personally involved to the point of seeing this as a direct challenge to her competence as a teacher, and she determined to have the child at the top of the class by the end of the year. Instead, of course, he ended up where he had started, at the bottom of the class. Accusations and counter-accusations between the teacher and the parents whirled

around the bewildered child's head. Early in his next year in school the parents were awakened at two o'clock in the morning by a strange sound from the living room. On investigation they found their little tow-headed nonreader huddled in the corner of the living room sofa, sobbing uncontrollably. The parents realized the phoniness of his "social pass" to grade three and the next day made an appointment to have him evaluated. Effective therapeutic tutoring using the Orton-Gillingham approach enabled him to achieve good-reader status. He now could also laugh, sing, and play again—and there were no more two A.M. sob-sessions on the living room sofa.

New Trends

The rather extensive publicity recently given to learning disabilities has produced some interesting new trends. Instead of first seeing children for evaluation when at about the grade four level or later, we are now seeing large numbers of grade one children and a significant number in kindergarten. We even see an occasional pre-kindergarten youngster. Alert, intelligent, and thoughtful young parents are daring to brave the critical comments of school personnel because they have brought their child for diagnostic evaluation before the child has had a chance to "bloom" (or to fail!).

Mention should be made of yet another interesting trend, a positive trend, among parents of children with learning disabilities. We are refering to the rising sense of *parent power*, even in rather remote areas. For many years parents have felt subdued, anxious, and at the mercy of school authorities. Even a routine school conference often was perceived as an agonizing experience, a situation where one might hear the ultimate in bad news about one's child. Parents have been subservient to the "experts," not realizing that the "experts" often did not know as much about their child as did they, the parents. Parents are now asking basic questions and demanding meaningful answers. They are refusing to accept the blame for the school's failure to teach their children to read. Parents have remembered that *they* own the schools and employ the teachers. They realize that their child is entitled to whatever help he needs to enable him to learn to read. The pseudo-remedial gimickry less frequently dazzles parents. Often they see through the teaching disabilities in the school and refuse to have their children fall victims to these teaching disabilities. Parent power will not be denied and the schools are becoming aware of this.

Parents and Schools

Much has been written about the lack of easy communication between schools and parents; we will mention only a few highlights as seen in every day clinical practice. In our experience, school personnel are receptive to meeting with child psychiatrists and parents to discuss the handling of an *emotionally disturbed* child. However, the same personnel often are resistent to accepting professional findings on a *dyslexic* child. It is incongruous and seemingly inappropriate when a teacher, with no background in psychopathology or neurophysiology, insists that the patient is not dyslexic but rather is emotionally disturbed or is a hyperactive youngster who should be put on Ritalin!

Teachers and principals often blame the parents for a child's underachievement. The concerned mothers who have tried to get special help and understanding for their children often are labelled as troublemakers or as aggressive parents. Frequently the comment is made to us, "All that child needs is for his parents to get off his back." Parents often may be reluctant to insist upon adequate help for their child, fearing retaliation against the child. This is not an unfounded fear, as we have witnessed all too many times.

Recently we saw a little boy of superior intelligence who was in grade three. Although he recognized a few sight words he could not even spell his four letter surname correctly and was unable to read in a primer. There was a family history of developmental dyslexia. Both parents were physicians and were concerned that the boy get the remedial therapy that we recommended. Although the principal was not sympathetic, he did agree to allowing limited tutoring, and an experienced therapeutic tutor was assigned. However, the child's teacher immediately began to sabatoge the effort. Not only did she ridicule the child in front of the class, but also planned especially interesting activities while he was out of the room. When the parents protested to the principal, this teacher telephoned the mother to say that the only thing wrong with the child was the mother's overinvolvement and impossibly high expectations. The teacher added that the mother was ruining her own child. Incidentally, this mother is a prominent psychiatrist, but despite her maturity and professional status she was quite shattered by this experience. When this kind of distressing and ego-damaging and guilt-producing episode can happen to parents who are professional people and in the upper social-economic bracket, it is not hard to imagine the effect of such treatment of relatively unschooled parents in the lower brackets who are so easily intimidated by authority figures.

Cruelty in the Classroom

Cruelty in the classroom takes many forms directed against the child and, therefore, also against the parents. Children can be battered emotionally as well as physically. One ten-year-old boy we saw in October two years ago had already been strapped four times by the principal, the first two times because he had not done his work and the last two times because he had run away from school. This youngster was in a "special class" for the third year in a row—one of those classes of undiagnosed, unhappy children of various ages with a wide variety of problems. He was a total functional illiterate and examination revealed the classical picture of developmental dyslexia. Despite the diagnosis of developmental dyslexia having been made by a prominent pediatric neurologist, an ophthalmologist, and us, the school insisted that the boy was simply spoiled and obstinate. We were told that he needed to learn "to respect authority" and then he would be willing to learn to read! He was being taught for the fourth year by the look-say method. When asked why another approach was not tried in view of the fact that this did not seem to be taking hold, the special teacher said with great confidence that the school tests showed this was the way the boy would best learn. The boy received no additional help and when seen two years later had not advanced at all in reading and spelling. By then he had developed critically severe emotional problems and complete alienation from school. His parents were having serious marital problems; they felt alternatively guilty and angry about the boy because the school had so often blamed *them* for the child's learning disabilities.

Despite the great emphasis today on humane teaching methods and individualized programs, we continue to see about as much cruelty in the classroom as we did twenty years ago. And, now as then, the children with learning disabilities are especially vulnerable to such treatment. Children are humiliated by having to sit in front of the class, by having their work torn up and thrown in their faces, by being called stupid, and by being yelled at, slapped and strapped. Further commonly practiced cruel treatment often humanely motivated, is to send the boy who is in grade three or four down to grade one for his reading period. The same teacher who will do that sort of thing will protest special tutoring because "it calls attention to the child's problem." Teachers often feel that the pupil doesn't know he has a problem and that we should all pretend the problem doesn't exist.

Parents sometimes doubt the child when he tells them of mistreatment he has suffered in the classroom. This adds to the child's burden and leaves

him with no one to turn to. When the parents know about such treatment of their child they may be perplexed as to what to do. Some parents even favor such treatment, feeling, themselves, that the child is just lazy or obstinate. In fact, a recent poll revealed that 60 percent of parents approve of spanking children in school, whereas only 29 percent of teachers favour this form of punishment. (We remember one principal, however, who said that the only way he could get respect from the children was to use the strap and that if the school board outlawed strapping he would resign.)

Incidentally, we want to make it clear that in speaking of cruelty in the classroom we are talking about a phenomenon which is all too widespread in North America and in Europe and which is not restricted to Canada, to British Columbia, or to our local area. We have seen the same kinds of things happening in the United States and have heard about these practices from educators and doctors and patients from all over the western world.

Next to fearing loss of a parent or parents, the child's greatest fear is that he will fail in school. Yet we repeatedly see this matter of "failing" a child treated with incredible thoughtlessness. The height of cruelty is to fail a child without giving him adequate preparation for his retention and without supplying adequate support and help throughout the following year.

One little nonreading girl was not doing well in second grade, but the teacher and principal decided to pass her to grade three. On her final report card that year was written "Passed to Grade Three." The following fall, when she returned to school the first day, she was sent to a second grade class. At recess time she came running home in tears, telling her mother, "They have made a bad mistake." Her mother went back to school with her and found out that it was not a mistake, in the eyes of the school. They had decided not to pass her after all. So the mistake turned out to be even more terrible than the little girl had thought.

Another child, a little boy, and his parents, were told that he had passed "on condition." After only one week in grade three he was abruptly put back into grade two. He was devastated by this and immediately developed a bed-wetting problem and refused to go to school. It required a good deal of therapy, along with effective tutoring, to rescue him from that experience. Understandably, the parents were deeply resentful toward the school personnel.

Equally cruel are the "invisible failures" that many children are enduring. Ungraded classes have much to commend them; but often they are used to disguise failure. Somehow when he spends four years to do three years'

work, the child and his parents aren't supposed to notice that he has made little or no progress. Also there is a built-in but erroneous assumption that an extra year of inappropriate teaching will somehow remedy the problem. Thus, the ungraded, so-called individualized approach can be insidiously destructive. Parents of the dyslexic child find it very difficult to cope with this system because it is easy for the teacher to rationalize. How can the parent possibly know where the child is or where he should be? It is not until the child reaches the fourth or fifth grade that the extent of the damage comes out in the open.

Another misconception prevails in some schools, namely that repeating the grade automatically and magically resolves the problem. Instead of asking why the child didn't learn the first time in the grade, it is assumed that what he needs is to repeat the grade. Unfortunately, he is usually taught again in the same way which caused him to fail the first time. At the end of the second time around he still does not know how to read.

Just recently we have seen two children who exemplify this problem. One little girl had repeated first grade and is now repeating second grade. Despite an I.Q. of 118 she is totally unable to read accurately in a primer. She is a classical developmental dyslexic, but was not identified by the school. The other patient is a little boy who repeated the first grade and when we saw him he was repeating the second grade for the third time. (Incidentally, this is most unusual in British Columbia where "the social pass" is widely accepted.) With an I.Q. of 112 this boy still was completely unable to read and he did not know the alphabet. He, too, was a developmental dyslexic who had not been diagnosed. Both of these children are responding well to appropriate variations of the Orton-Gillingham approach. Parents faced with this kind of problem are in an impossible bind. To whom can they turn for advice and help? Children often are stereotyped and it is assumed that the child is just an underachiever or late bloomer so that nobody notices him and nobody seems to care—at least not until he starts to "act out."

There are many varieties of so-called "therapeutic" endeavours in the classroom which, because they are erroneous time wasters, are really disguised cruelty. To tell a child that jumping on a trampoline is going to resolve his reading problem is cruel. To apply amateur sensitivity training in the classroom, asking children to tell another child that they think of him, is cruel. Having a nonreading, nonspelling child spend time each day telling stories to a tape recorder or listening to a story told on a tape recorder while looking at the same text in a reader—when this activity is used as a substitute

for teaching him to read and spell—is cruel, because it is deceptive. To encourage a family to involve a child in creeping and crawling his way to learning to read is cruel because it has been demonstrated that there is no relationship between the two. All of these methods are cruel to parents, too, because they raise false hopes which lead to deepening of despair. Furthermore the parents are paying for this through taxes. Ironically these parents are paying for the *mistreatment* of their children.

In the November 1972 education issue of the "Saturday Review," Saretsky and Mechelburger suggest that parent-power might be mobilized and that schools very likely could be taken to court, sued for malpractice. The article is entitled "See You In Court?" and the authors emphasize that the school board and its agents have been professionally negligent when they have selected inappropriate, ineffective instructional materials and procedures. They further underline the fact that years of inadequate treatment cause irreparable damage to the self-confidence and self-image of children.

Schools sometimes seem to put every possible barrier in the way of a family's getting diagnostic help and understanding of a child's problem. Some of the testing done in the schools is performed by inadequately-trained and inexperienced people who know little or nothing about learning disabilities. Their findings frequently are used against a child instead of as a means of helping him. Yet school personnel often resent having parents obtain outside opinions and become very defensive when recommendations are forthcoming from outside professionals. This makes the parents confused and uncertain as to how best to help their child.

The Family and Prognosis

If the family decides to seek help from the family doctor they may meet with frustrations because he may not know much about learning disabilities. They may therefore receive inappropriate advice. If the family is lucky enough to be referred to someone who understands these problems and who is able to make an accurate diagnosis they are usually delighted and eager to proceed with a good remedial program. However, appropriate remedial help often is not available; many children are left stranded with a good diagnosis but no treatment. Many children are seen who have had many diagnostic examinations but are still without meaningful treatment programs. This is terribly frustrating and bewildering to parents who often are understandably angry. The trail which leads to help for the child is often long and confusing.

Many parents get lost on the way; those who do find effective help are relatively few in number. Community-wide availability of remedial therapy for every handicapped child is one of the most critical needs in our society today. This service is urgently needed both as a preventive mental health measure and as an educational necessity.

We all know what happens to children who do not receive effective help. The high incidence of school dropouts, delinquency, and serious emotional disorders has been well documented by many research experts. These children often end up being alienated from society and often from their families. They lead unfulfilled lives of futility and frustration. Suicide sometimes results, especially in the teens.

In contrast, those children who do get appropriate help have an excellent outlook for the future, as demonstrated by Margaret Rawson's splendid follow-up study. Family attitudes and actions are highly relevant, both in the prevention of reading disabilities and in the treatment program. Dr. Durrell (the originator of the Durrell Reading Test), Dr. Jeanne Chall of Harvard (author of the scholarly research study, *Learning to Read*), and Dr. Selma Fraiberg (child psychoanalyst at the University of Michigan) all have observed that the child coming into grade one knowing the alphabet and the names of letters less frequently develops a severe reading disability. Families would do well to teach these things to their children before they enter school. It would be interesting to know how many families *are* teaching their children how to learn to read before they ever enter school. (We suspect the number is rather sizable and is growing.) Families should emphasize constructive use of exciting and beautiful books by reading to their children from a very early age. This also is very good for family relationships. Sharing in this interesting and meaningful activity promotes healthy family interaction. Families should avoid impulsively driving their children to reading, but rather should gently help them to discover the thrills and excitement to be found in books and try in every way to provide intellectual enrichment. TV (much as we deplore it) is now a fact of life. The parents of dyslexic children can be selective in its use, and watch it *creatively* with the child. We know one family in which there are four severely dyslexic children. They live in a remote area where there are no remedial facilities. The parents learned the Orton-Gillingham techniques and each evening after dinner the parents and four children gather around the table to share an hour of learning together. Not only have the children made excellent progress, but family relationships have been greatly enhanced.

The Family in Relationship to the Therapeutic Tutor

When the child is receiving effective remedial therapy in the school or privately, does the family have a role to play? The family's role is indeed important. First the family and the child need help in understanding the nature of the problem. When the diagnostic findings have been interpreted to the parents and they realize that the child suffers from very real problems rather than from laziness or stupidity, they can be far more accepting and supportive. Parents should relate to the remedial teacher or therapeutic tutor in a supportive role. They should discuss the problem with school personnel and attempt to work co-operatively with the child's teacher. Older children with severe dyslexia need to have all classroom reading assignments read to them and often this can be done by the parents or older siblings. Parents should also insist that the dyslexic child in the higher grades be allowed to take his tests orally. As soon as he can be independent of these forms of aid, experience has shown that he will want to be, except, perhaps, for an occasional relief from overloads.

Many dyslexic children have major problems remembering what they hear exactly and in order. When the parents realize that this limitation makes it difficult for the child to understand directions and remember things to get at the store they will avoid punishing him for what he's unable to do, but instead will help him develop auditory recall and sequencing. Parents should act as intermediaries between a child and a too difficult teacher or task.

The majority of children with dyslexia have some secondary emotional problems. If parents can understand the nature of these problems and how to help the child with them, they will contribute a great deal to the child's total development and improvement. Consultation with an informed psychiatrist may be valuable for parents struggling to help the child with his emotional problems.

Family therapy sometimes is indicated and helpful, but it is rarely necessary to involve families in long-term therapy. Perhaps the most important thing is a thorough discussion and interpretation of the diagnostic findings with the family and then follow-up counseling in regard to their anxieties and concerns. Resolution of family conflicts is important, but the first priority usually is a child's need for expert remedial therapy. Sometimes supportive therapy or counseling for the parents needs to be provided as adjunct therapy, but often realistic help with school learning will provide an adequate answer at home too.

Remedial language teachers and therapeutic tutors should know and

understand the family and they should know how to avoid being drawn into family conflicts. Families should be helped to work through their feelings about school personnel and, whenever possible, find ways to establish a relationship of mutual acceptance and understanding. Family doctors who are fully informed of the nature of the problem often can serve as family therapists, calling on the psychiatrist only in selected instances.

Failure to recognize the role of the family in therapeutic intervention for learning disabilities can result in prolongation of therapy or even in failure of therapy. Including the family in the total program not only will help the child to respond, but also will help to improve family communication and interaction, thus estabishing a more solid foundation for the total growth and development of all members of the family. Thus a learning disability can create the basis for a meaningful experience for the entire family and actually can bring about strengthening of family relationships.

Many of us today can view the Orton-Gillingham methodology as being part of the whole liberation movement—not black liberation nor women's liberation, but the liberation of dyslexic children and their parents. We know that in providing the structured, total language teaching that will enable the dyslexic child to learn to read and spell and write, we are liberating him so that he can have a choice in determining his future. Learning the basic skills will liberate him for participating in the wonderful world of books, if he so desires. Or it will give him the free choice to choose a non-academic life. But not only is that dyslexic child himself liberated. His family too, through developing an understanding of the problem and through learning how to be supportive and helpful, also is experiencing liberation. The family cannot be divorced from the dyslexic child. Neither can they be divorced, thank heavens, from the satisfaction and joys that accompany the effective remediation of that child's learning disability.

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2. Shadow and Substance of Specific Language Disability: A Longitudinal Study

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Throughout the years there have been uncounted numbers of students such as those described in the following pages. Bizarre though their stories may seem, similar situations are being experienced frequently around the country today. The drama, the hopes and frustrations, the struggle not only to overcome but to survive in a society where it is assumed that one has command of our written language, are being repeated over and over.

These people (young and old) have specific language disabilities—"dyslexia." Specific language disability has run a gamut of labels. No matter what we call it, this is a specific problem. It affects any area of language (speech, reading, spelling, and/or writing) and sets the person with normal hearing and vision and average intelligence apart from his peers in dealing with our language. Although there is a tendency to sugar-coat the word "disability" and call it an "inability," the fact is that these people are disabled as surely as if they had lost any of their faculties.

Abel

Abel was scheduled to arrive at our school's Language Training Department for evaluation shortly. For the past hour I had been studying information his parents had collected through the years, and various other reports sent over by the headmaster with a note saying, "Let's see what we can do for this one."

The earliest comments about Abel were made when he was beginning kindergarten. At that time he was a happy, interested child who enjoyed participation in various activities, even though his coordination wasn't equal to that of the other children. He had some difficulty making himself under-

stood when he spoke, and the teacher had made a note that this was because he had been late in learning to talk. The teacher seemed to enjoy Abel and commented several times in these reports that he was a "peaceful" child.

Toward the end of the kindergartent year, Abel began to change in some mysterious way, and the teacher became disenchanted with him. His speech in later reports was referred to as "silly baby talk," his coordination became "clumsy," and his behavior changed from being "peaceful" to being "disruptive." His disruptive actions involved the alphabet blocks which he would throw about the room or knock down when the other children piled them up. He also seemed fond of taking a crayon and marking through the names of the months on the calendar and other children's names posted about the room.

Reports from several tutors who had worked with Abel through the years indicated that, at age nine, after four years of intensive psychotherapy, he was still incapable of performing normally in a school situation. From time to time the psychiatrist would recommend that home tutoring be terminated and that Abel attend school. A number of schools had been tried, but each time he had withdrawn from group participation unhappily, contenting himself to observe the other children from afar and not speaking even to the teacher. Abel was then returned to home tutors employed to teach him "anything" they could, but who were successful only in being companions.

One tutor noted that he was unable to assimilate information from devices or visits to interesting places such as the zoo. After such a visit Abel might volunteer that the monkey was "funny" or that the car had gone "fast," but a short time later he seemed unable to recall which animal was funny or what it was that had gone fast.

Abel's folder was full of medical reports. The pediatrician indicated that he was slow in the development of gross motor and fine motor coordination, but that he was maturing normally in other ways. Both vision and hearing were normal, and Abel's only disability was severe asthma.

The allergist reported Abel to be allergic to so many things that there seemed to be no way to protect him completely. Feather pillows had been removed, and an elaborate vacuuming system and air conditioning had been installed in the house. His diet was restricted and carefully supervised. Family pets had been disposed of, and special medication was always close at hand. These things created an abnormal way of life for Abel, and both the pediatrician and the allergist had commented upon how loving, yet sensible, Abel's parents were in dealing with him.

A neurologist had taken an electroencephalogram which showed no brain damage, and he seemed to resent spending time evaluating a "normal child" who would surely "outgrow" any problems he might have.

Psychological testing given Abel at age six placed his IQ at full scale 87, with no significant difference between the verbal and the performance averages, according to the Wechsler Intelligence Scale for Children (WISC). This placed him in the "low average," but certainly teachable, classification.

The psychiatrist had administered other tests, some of which were sadly amusing. When asked to draw a picture of his parents, Abel had drawn a sitting figure of his father without feet. Beside it was the comment of the psychiatrist, "Possibly so that father can't run away?" He drew a picture of his mother with very large ears, and this accompanied by the comment "Possibly because mother is listening to hear whether Abel gets into mischief?" One couldn't help wondering why feet were so important in a sitting figure, and what mother of a sick child wouldn't seem to have unusually good hearing ability. I mentally rushed to Abel's defense.

The psychiatrist had seen Abel regularly, and the parents as well whenever their presence was desired. The maid and gardener had been briefed, as had everyone who came in contact with Abel, not to make him unhappy in any way. Still he was far from being a happy child.

All of the evidence before me pointed strongly in the direction of specific language disability. His early, preschool life had been one of contentment, and his self-image then seemed good despite the fact that motor development was slow. I reasoned that the introduction of letter symbols could have become an unidentifiable threat, and frustration resulting from trying to cope with them had driven Abel to a small protest, followed by withdrawal into a dull, passive state. The incident reported about a trip to the zoo indicated that recognitive memory was fair, at least, but that recall memory was poor. Vision and hearing were normal, and an IQ in the low average group didn't seem incapacitating when all other factors in this case were considered. My experience in the past had been that asthma and allergies could be at least partially psychosomatic in cases of specific language disability. Finally, I felt that the psychiatrist was almost as frustrated by his fruitless efforts as was Abel himself.

I wasn't sure whether the parents or the psychiatrist had requested this appointment, but it seemed that another school was going to fail. I went out to greet Abel and his parents.

I liked what I saw. Abel's parents talked to him and with him, as well

as about him, and my heart went out to them because they seemed genuinely careworn. While they were still hopeful, I felt that with each new attempt to find the answer to his problems a little more hope vanished. I had noted earlier that both parents had advanced degrees and could be labeled as being "highly successful." Abel's mother had had a very satisfactory career as a business woman before she "decided to change the emphasis" in her life and "become a full time mother," as she put it.

They left Abel and me alone. If I were to describe that first interview it would take a thousand words. Never had I seen a person move so slowly. Abel was passive and agreeable; he simply watched and waited. One of the comments in his folder had been that he could sit and look at a piece of string for long periods of time, and I could believe it, provided the string didn't move too rapidly. I found myself wondering if Abel could flinch.

I asked him to sit down, and he waited for me to point to the chair. Then he had to be asked to pull the chair to the desk. From that point on he answered questions with as few words as possible (but with no change from the way he had been speaking with his parents), and had to be told what to do, usually with gesture for reenforcement.

While he examined a book, I examined Abel. He was tall for his age and extremely well-padded by about twenty pounds too many, not a fat boy but almost. He was what I term "lubberly" and looked like the proverbial unmade bed. His clothes were immaculate, but it was difficult to imagine how one who moved so slowly could have his shirt tail out, buttons unbuttoned, trousers slipping dangerously, one sock inside out and shoe laces untied. Abel's mouth was open constantly and he breathed through it noisily. His nose ran, but when handed a tissue, he wiped it quite agreeably. Abel's hair was cut short and there were some bare patches in it which looked as though a doctor might have shaved them in order to treat some kind of insect bites which had since healed. I wondered at the way Abel would make his eyes go dull from time to time and create a very vacant expression. The manifestations of mental retardation in this "normal" child were interesting. Or were these small, momentary "black-outs"?

It was difficult to find some glimmer of hope academically; if one doesn't try at all it's difficult to make mistakes. Spelling was out of the question, and Abel's "reading" was to emit meaningless jargon bearing no resemblance to the words on the page. As he was unable to "score" on the standardized tests, some of the tests from the Gillingham Pre-Reading Selection Program

for early identification of children having specific reading and spelling disabilities were used for diagnostic purposes.

Although Abel didn't work efficiently with his right hand, his performance with it was superior to that of his left hand in the tasks presented. His speech was slurred, and errors such as omitting syllables, reversing the order of syllables in words, and use of incomplete sentences were apparent even in echo speech. On the Sensory Recall tests, Abel reversed the direction of sixteen items out of twenty on one visual subtest, and had similar difficulty with the auditory and kinesthetic subtests.

These tests substantiated much of the information in Abel's folder. He had grave problems dealing with the representational symbols of language, and there seemed to be no difference between his ability in the visual, and auditory, or the kinesthetic areas. They were all weak. Reversals, directional confusion, and difficulty with spatial relationships when trying to use reading and writing processes were indicative of a severe disability. Here was a student with normal sight, hearing, and intelligence who had been diagnosed and treated as a "non-learner"; a "learning disability case coupled with emotional instability" who lacked the desire to learn, according to psychiatric evaluation. I felt that Abel had a specific language disability and that despite apparent complacence, he was very concerned. Otherwise, why would he withdraw behind that hopeless, empty facade periodically? He was extremely hypo-kinetic.[1]

Determining the best course for Abel was difficult. If he were turned away from this school, he would probably continue to vegetate. If he were accepted, provision would have to be made for a student who was the proper size and age for the fourth grade, but who had academic skills inadequate for even the first grade. This was a time to see if the headmaster really meant it when he said, "Schools must meet the needs of the individual student."

Abel was accepted, and the program was explained in detail to his parents and to the psychiatrist. All academic subjects were to be taught in the school's remedial department and he was to be with his classmates for

[1] The hypokinetic child receives less attention than the hyperkinetic child because he causes less distraction in school and at home. He is, unfortunately, treated as though he were "dull" or even retarded. Parents tend to accept this estimate of their children's ability (it's almost as though they were afraid to find out the truth) and few are taken to clinics for extensive medical and psychological testing. I believe there are many more of these children than we know about.

other activities. The parents thought the plan was a good one; the psychiatrist felt that the program was much too "structured," that it would make him feel "different" from the other students, and that any academic requirements would make him "unhappy." The parents and the headmaster decided that Abel had never been exposed to genuine structure and might benefit from it, that he was already different from other children and knew it, and that the process of learning that which is difficult is not always a happy experience. So the retraining began without the blessings of the psychiatrist.

Each time Abel entered a teaching room in the remedial department, the windows were opened and he was asked to bend down and touch his toes five times. On the fifth bend he was often reminded to tie his shoes as long as he was down there anyway. Periodically during the lesson when he showed signs of fatigue, the windows were opened again and Abel would automatically rise and touch his toes five times, frequently observing on the fifth that "they're tied." He was moving out of his state of lethargy, developing automatic responses, and vocalizing his observations; these seemingly small things were evidence of great progress.

"Proceed as rapidly as you can but as slowly as you must" became his teachers' motto. Abel was in effect "programmed" to do his work in a certain manner without deviation. With the security of knowing what was expected, his responses grew to be automatic. Gillingham techniques and philosophy were adhered to strictly, and as purposeful drill became routine, he became increasingly independent. Creative thinking began to develop, and oral language emerged as an energetic force for expression.

Abel began to change physically and emotionally as the work progressed. He was no longer torpid, but moved with determination and confidence. A fine, gentle sense of humor enhanced his comprehension of situations in his everyday life. The harrowing bouts with asthma ceased. Hair grew in the bald patches, and it was discovered that they had been caused by his pulling the hair out by the roots. Eye lashes which had been removed similarly also appeared. There was great rejoicing among his teachers the day Abel pushed another boy for getting in front of him in the lunch line. A truly normal boy was emerging.

Much of Abel's progress in the first year remained unmeasurable by standardized tests (Table 1). In time, word attack, vocabularly, and technique made both oral and silent reading comprehesion secure, and Abel became responsible for all of the reading assignments in his class. At the same time, his mathematical ability which had been developing at approximately

TABLE 1: ABEL

	Fall (Initial Testing)	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Grade	4		5		6		7		8	
Gray Oral Paragraphs	0	1.4	2.1		5.7		8.9		9.2[a]	
Iota Single Word Recognition	0	1.1	1.8		5.5					
Morrison-McCall Spelling	0	1.3	1.7		4.2		6.1		7.3	8.8[b]
Gates Reading Survey										
Vocabulary					4.0		7.6		9.6	
Comprehension					4.4		7.8		9.2	

Note: No score was made on initial standardized tests, therefore, the Gillingham Pre-Reading Selection tests were used for evaluation as described in the text.

[a] Abel released from special reading classes.

[b] Abel released from special spelling classes and all remedial work terminated—now a bona fide member of his grade, he was no longer designated as a "special student."

the same pace as other basic skills increased to the point at which he could be responsible for the mathematics of his regular class.

Graphic language was the last to respond to retraining. Visual perception and discrimination, which had been the first area of improvement, led the way for auditory strengthening, and Abel became a good oral speller. He had difficulty writing rapidly enough to maintain a flow of language or to "keep up" in dictated spelling. Finally, the kinesthetic area improved so that he was able to fulfill the written requirements of his grade. When he left the remedial department four years after his first lesson, his penmanship was only fair, but as Abel said, "I write better than some of my teachers"—and he did.

Participation in sports had been impossible for Abel in the beginning, but he learned to play a little tennis. His major accomplishment was to become the manager of the high school basketball team, traveling from game to game with the squad. No one seemed to appreciate and enjoy simply being alive more than Abel.

He completed college successfully, married and has three children—all with specific language disabilities—but properly diagnosed and treated at early ages. Today Abel owns a growing business and is a solid addition to his community.

Ben

Ben was a high school drop-out whose parents had insisted that he come and see me. He had always been a normal, healthy, well-adjusted youngster who had never been successful scholastically, although he had had "special reading" every year in school. His parents reported that his vision and hearing had been checked periodically and were normal, but they had no knowledge of an IQ test having been administered. Actually a reading IQ test had been administered (Kuhlmann-Anderson Intelligence Test) instead of a non-reading test such as the Wechsler. This dangerously inaccurate evaluation of intelligence, based solely upon reading ability, pigeonholed Ben as being "dull."

From his school I learned that as soon as Ben had reached the age at which attendance was no longer required by law, he had been released, with relief. Ben had been in freshman "bonehead" classes since entering high school, and this was attributed to the fact that he was "not very bright." There was some comment to the effect that he was a trouble-maker. I didn't know quite what to expect from this normal, well-adjusted nuisance!

Six-foot-four of brawn filled my teaching room as Ben took over. He invited me to sit down and said that he had been "worked over by the experts," and that he wouldn't hold a grudge if I made him do some "pretty stupid reading and writing." "I know Dick and Jane from cover to cover," he grinned.

Perhaps he did know Dick and Jane, but it soon became apparent that he wasn't very far past it. Ben's oral reading skills were at a fourth grade level. His idea of word attack was to substitute the word *something* for any word he was unable to pronounce. He read, "Many *something* left that *something* saw *something*," for "Many people felt that Lindberg was brilliant." The reversals of "left" for *felt* and "saw" for *was*, destroyed comprehension of this sentence, but in others Ben's substitution of the word *something* enabled him to sustain a flow of language which led to amazingly good comprehension in many instances.

The standardized tests and my own evaluation tests were wrung

thoroughly to obtain all of the information possible about Ben. In order not to invalidate the standardized tests, we administered them in strict adherence to the directions. Then they were readministered orally. Ben's "score" on the vocabularly section increased from a fourth grade level to a seventh grade level, and his comprehension increased from a fourth to a twelfth grade level. He thus demonstrated that he was able to cope with language; he was simply a functional illiterate.

The result of the spelling test wasn't as revealing as Ben's performance. His frequent comment was "Can't remember that one," but he was able to "remember" enough words to reach a third grade level on the test. When taking notes during a break in the session, however, he misspelled nine words he had been able to recall correctly when taking the test. It appeared that he had "guessed" a third grade score, although his spelling was actually poorer than that. His weakness in visual recall was as obvious in spelling as it had been in reading, but subtests indicated no auditory deficiency.

Ben's penmanship was almost illegible, and when I commented upon it he said, "Who reads it?" He certainly didn't! Careful analysis indicated no real difficulty with spatial orientation when writing letters, words, or numbers. There was more evidence of directional confusion, but Ben was wary and the only real evidence of this problem was in static and kinetic reversals. (It developed later that Ben was well aware of his problem relating to directional confusion, but his work as a mechanic had made him cautious and put him on an "alert" to cope. As he put it, "Cross things up in a machine and all hell breaks loose!") Purely kinesthetic exercises revealed no kinesthetic disability. Most of Ben's difficulty with writing was caused by poor, indecisive spelling, and by trying to grasp a pencil satisfactorily in his tremendous, work-worn hands.

It was true that Ben hadn't gotten out of freshman classes academically. "I'm just too dumb for school," he commented. But he didn't agree with the report from school that he was a trouble-maker. It semed to him that when anythir.g unfortunate happened, he was more visible than others, and because he was the biggest he was held accountable for the actions of others in the group. Ben suffered from the usual contradiction in behavior of the peers of unusually large boys, that of being admired because of their size one minute and badgered because of it the next.

Beneath the bravado, Ben was a gentle person who wanted to please people, including his parents. He was imposed upon by anyone who had a back-breaking job to be done or an automobile to be repaired, including the

teachers in the very school that didn't want him "used" him shamelessly. Ben had taken time off from his job of driving heavy construction equipment (at ten dollars an hour, which was a top wage at that time) to come for this appointment.

I admired Ben. The state had legislated him into schools which had done little to teach him. He faced the torment of failure as he was passed along from grade to grade, but he didn't blame anyone. "Dumb Ox" was his nickname. Because big boys don't cry, he had learned to laugh. Now he was making his way in a man's world while his peers were still schoolboys. When I explained specific language disability and its ramifications to Ben, his response was a Waynesque, "Hell, I know I can't read. What are you going to do about it?"

The first goal was to increase Ben's reading and writing skills so that he could perform well enough to benefit from taking a high school completion correspondence course. Although he began lessons in the spring following his tests, Ben had made a job commitment which prevented him from studying during that summer. We resumed classes in the fall, and his reading skills improved rapidly (Table 2.). Ben became an avaricious reader, and despite the fact that I tried to keep him at his own level, he insisted upon venturing into more difficult reading. This might have been disastrous for some people, but Ben simply said that he was "going to hang tough" because he liked what he was getting out of it.

Spelling lagged behind reading, but not because of lack of effort. Ben applied his new knowledge of phonics flawlessly, and seldom misspelled a word involving a rule or generalization. The Gillingham ratio charts fascinated him, and he marveled at the reasonableness of the language that had baffled him previously. His greatest difficulty lay in visual recall which involved remembering the non-phonetic "learned words."

I remember commenting upon Ben's spelling the word "grieve" correctly in a sentence he wrote. I told him that I was surprised, and he told me that his fourth grade teacher had taught it to him and he had scars to prove it. I must have looked doubtful because Ben showed me some fine scars on his knuckles and demonstrated how the teacher had struck his hands with a ruler every time he missed the word. I was shocked but Ben didn't seem bitter. "She was only trying to teach me," he said.

When Ben's reading reached the tenth grade level and he was writing fluently, with acceptable content and mechanics, we were ready for the next phase of the work. This was to apply to a correspondence school for the high

TABLE 2: BEN

	Spring (Initial Testing)	Fall	Spring	Fall	Spring	Fall	Spring
Age	17	18		19		20	
Gray Oral Paragraphs	4.4	6.2		12.7[a]			
Iota Single Word Recognition	4.5	5.5					
Morrison-McCall Spelling	3.4	5.4		8.4[a]		12.5	
Gates Reading Survey							
Vocabulary	4.5	7.2		10.0[a]			
Comprehension	4.3	7.2		10.3			
Diagnostic Reading Tests							
Vocabulary						87%ile Col. Fresh.[b]	
Comprehension (total)						92%ile Col. Fresh.	

Note: This student was a "drop-out" at age 17, having completed only a year and a half of high school for credit although he had attended the school for four years. He continued with special reading program during the summer of his 18th and 19th years. A high school diploma from correspondence school was received the summer following termination of remedial reading program.

[a] Correspondence course for high school completion started.
[b] Remedial reading program terminated.

school completion curriculum. Ben worked at his job, but managed to keep up with his studies for six semesters and one summer. After that he needed no further remedial help, but I saw him periodically to check his progress and to administer the tests sent by the school.

Shortly before his twenty-first birthday Ben "graduated," receiving a diploma which signified tremendous accomplishment. He was quite overcome with emotion and I knew that few of his contemporaries would ever experience such a feeling.

I lost Ben after that, but have heard that he completed college with a degree in agriculture and has become a very successful rancher.

CLEO

Cleo's mother had convinced me, against my better judgment, to see her eight-year-old daughter for testing. I had explained over the telephone that even if I found that Cleo had a specific language disability, my schedule wouldn't permit me to work with her, as my teaching hours were from seven o'clock in the morning to five in the afternoon. The mother was frantic because the school had recommended that Cleo be placed in a "special school" for retarded children. It was difficult to determine whether the potential stigma or her concern for Cleo's welfare was bothering her more. No matter which it was, both she and the child were in trouble and I couldn't refuse this weeping mother.

The appointed time came and Cleo was led firmly into the room by her mother, who had a great deal to say about what she thought of the schools. Freed from her mother's grasp, Cleo moved around the room. Objects fell in her wake as she appeared to ricochet off the furniture. She spied an empty box in which some books had been delivered, and began stumbling over it, enjoying the noise. When the box was no longer a convenient shape for being jumped upon, she contented herself by kicking it, but somehow her feet got tangled and she staggered as she kicked. I sent the mother on her way and turned my attention to Cleo, who was eyeing me suspiciously. "I'm not going to do nothing," she announced indistinctly.

I told her that it was all right with me because I was a bit weary anyway, and sat down at my desk and began going through the drawers on one side. Cleo was soon rummaging through those on the other side of the desk, and I couldn't help wondering at this child who was looking for something without asking what it was. Finally she hinted that she might be willing to "do something," and we agreed that it would have to be something "schoolish" and established a few ground rules.

Cleo had difficulty sitting still and applying herself to a task for more than a minute or two. She whistled, whispered, hummed and scratched, moving continually. Cleo was neither attractive nor unattractive; in fact, her face wasn't still long enough for one to determine facial characteristics. Her dress was soiled, her knees were skinned, and her fingernails were bitten bloody. She appeared oblivious to her surroundings. I couldn't help recalling Anna Gillingham's saying that it was unnecessary to test these children, that "life has already tested them and found them wanting."

On the oral reading tests, Cleo bounded along from word to word, not trying to relate them to anything meaningful, and using her own rigmarole in

place of real words. Periodically she would pause and say, "Wanna know sompthin?" and would then relate an incident or idea which had come into her mind. It was almost as though she were trying to compensate for her poor reading by offering evidence that she was capable of thinking.

She had been able to read an occasional word, but was not able to spell any of the words correctly. Even her own name was misspelled. But she did try, in a haphazard fashion, and at least made a mark to represent what was supposed to be the first letter of each word. As Cleo was able to reproduce only eleven letters correctly, (and some of them were reversed), she used symbols which were neographisms of her own invention.

Just as a rigmarole and neographisms had been substituted in reading and in writing, she expressed herself orally by using a special jargon. Despite the fact that she pronounced very few sounds distinctly, clever use of inflection and other expressiveness made her oral language quite understandable.

During the evaluation session, it became apparent that Cleo had a specific language disability with discernable weakness in all three areas of language (visual, auditory, and kinesthetic). The auditory seemed to be the most seriously affected. In addition, the abnormal clumsiness of apraxia was obvious, and Cleo was certainly hyperkinetic. Was there something more? The public school seemed to think so, as she had been classified as being in the "borderline to dull normal group" in intelligence.

Cleo's mother returned, and I sent Cleo out to play while we talked. The mother was most apprehensive, and I wondered if I should help her accept the fact that Cleo was not well-endowed mentally, or hold out hope to her that Cleo's problem was that of a specific language disability only. Instinctively I felt that this case was highly salvageable, and recommended that Cleo be tested privately for intelligence, hearing, and vision. The Wechsler Intelligence Scale for Children (WISC), the Audiometer Test for hearing, and the Telebinocular Test for vision were recommended.

After Cleo and her mother left, my children with whom she had been playing came in. They asked if I were going to teach Cleo, and when I said I didn't see how I could, they informed me that I just had to! They said that something awful was going to happen to Cleo if I didn't, and that she was too smart to go to that "special school" about which she had told them. When I asked why they thought she was so smart, they told me that she had known the name of every car that had come by, and had told them about such things as chrome-plated double cams. Cleo was "in."

Cleo's pediatrician recommended someone to do the requested psychological testing, and she was tested within the week. Her IQ according to the WISC was Very Bright Normal! (When advised of this by Cleo's mother, the school guidance counsellor said that the psychometrist who administered the tests must have made an error.) Results of the Telebinocular and Audiometer tests indicated no difficulties.

Cleo began lessons. Teaching her was like working with quicksilver. The pediatrician suggested medication to calm her down a little, but I asked that we try working for a month or two first. (I am reluctant to have drugs used unless as a last resort.) Her lessons were meticulously planned to allow for a change of position from desk, to blackboard, to library table at frequent intervals.

The Gillingham techniques were followed exactly, and as letter sounds became established Cleo's speech began to show improvement, as did her reading and spelling. Kinesthetic strengthening, apparent in speech, was also noted as cursive writing was introduced to replace manuscript. The periods of time she was able to sit continued to lengthen and her concentration sharpened. It was as though everything began to happen at once, as Cleo's ability to cope with language improved steadily throughout the first year. (Table 3.)

TABLE 3: CLEO

	Fall (Initial Testing)	Spring	Fall	Spring	Fall	Spring
Grade	3		4		5	
Gray Oral Paragraphs	1.4	3.9	4.5	5.9	8.0[a]	
Iota Single Word Recognition	1.1	3.4	4.3	5.5		
Morrison-McCall Spelling	0	3.8	4.0	5.6	7.7[a]	
Gates Reading Survey						
Vocabulary			4.2	5.7	7.5[a]	
Comprehension			5.0	5.9	8.1[a]	

Note: Cleo continued remedial lessons during the summer between the third and fourth grades. She was given a three week "refresher course" before starting private school in the fall of her fifth grade year.

[a] Results of retests administered before school started.

One night, after we had been working for about four months, her mother called me in tears. I was concerned, because things had been going so well. Cleo, who had never demonstrated affection, had come down stairs after being put to bed, rushed over to her mother's chair and kissed her "because she was so wonderful." The mother was dumbfounded. Cleo went on to say that when she had a tooth ache, her mother took her to the dentist; when she had a stomach ache her mother took her to the doctor; but she had had an "ache in her reading" for a long time, and this was the first time anyone had done anything about it. It was small wonder that Cleo's mother was in tears.

Lessons continued throughout the summer, and when regular school classes resumed in the fall Cleo was able to do the required reading and spelling. However, she was still not working up to the level of her native ability, and her parents asked me to continue teaching her throughout the school year. The school principal said that Cleo didn't need "the crutch of more special help," and that she was "infinitely better off than most of the others in her class." By this time her parents were not paying a great deal of attention to the school administrators, and she did continue. The only change was that she had lessons three days a week instead of daily.

By the end of the fourth grade year, Cleo was truly secure academically and had learned to cope with her language disability. She passed the entrance examination and entered a private school in which she was challenged scholastically. She thrived. The only times of regression during which both her speech and writing grew "sloppy" were those occasions of stress when she became overly tired, or when she was, as her mother said, "coming down with something."

In high school the only visible evidence of her early problem was in coordination. Cleo became the class clown, capitalizing upon her clumsiness, and although this diminished somewhat in college she was still sought after by her contemporaries because "where Cleo was, the action was." Her formal education ended with a master's degree in sociology, and today things are still happening around her as she moves about professionally and socially.

David

David's mother called after seeing me in a television interview. It was a case of my describing her sixteen year old son perfectly, and she wanted me to work with him. I counseled her about being so reckless in selecting a teacher for a very special problem, and told her that I would need a great deal more information. She brought his file to me that afternoon.

He was, it seemed, a complete non-reader. This diagnosis had been made by a psychiatrist, a child guidance clinic at a leading university, and by the adolescent unit of a medical center. Each had its own interpretations of David's problem as he had been studied and treated since he was eight years old.

At that time, a complete test work-up had been ordered by his pediatrician because David's behavior in school was alarming his parents. The testing determined that his hearing and vision were normal. His IQ, as measured by the WISC, was full scale 100, which placed him in the "average" classification. Neurological testing uncovered nothing significant, and David was referred to a psychiatrist.

The psychiatrist's report of testing done was minimal, and it was impossible to determine which tests had been administered. However, he did offer "too early toilet training" as a possible reason for David's lack of success in school. He also felt that David's parents had marital troubles of which they were unaware. As a result it was decided that David should be "studied," and the parents should see the psychiatrist regularly.

After two years, when he was ten years old, David had done little in school other than develop athletic prowess. He was extremely disruptive, especially during reading and spelling lessons, and spent a good many periods on the bench outside the principal's office waiting to be disciplined. She was distraught over years of interviews with David. Each time, before she could say anything, he would smile sweetly and tell her that he knew that he had been bad and that he was sorry. He seemed a "nice" child, and the teachers all liked David. They just couldn't stand to have him in class!

His behavior in various incidents indicated that he had little or no conscience, and seemed to warn of impending delinquency. The family, hearing of a child guidance clinic which purported to be able to help problem children, took him to it for testing. They were vastly encouraged by the understanding attitudes of all those connected with the clinic, and decided to sell the family business and move to the city in which the clinic was located.

The problem with David, the people at the clinic said, was a simple matter of motivation. A great deal of experimenting had been conducted with what was termed "motivational concepts," and it was thought that daily work on a one-to-one basis would solve his problems.

He went to the clinic on the bus each morning and enjoyed the trip thoroughly. While he never touched anyone, some of the passengers felt threatened. David engaged in such activities as standing on his head (he had

grown quite tall by this time) or hanging on a strap mimicking a monkey. He usually backed on and off the bus.

The therapists at the clinic were very understanding, and enjoyed David's antics and his conversation. He liked to dicuss "world affairs" and was very obliging when it came to using a variety of "motivational conceptual materials."

David didn't appear to be improving academically in public school despite his daily "tutoring" at the clinic. His parents grew discouraged and were convinced that, although tests had indicated that David was "normal," he was really retarded. He had to be either "retarded" or just plain "no good," and they didn't want to admit that the latter was true.

Halfway through David's third year at the clinic, when he was twelve years old, his parents received a letter from a doctor in a medical adolescent unit. They had heard of David's difficulty and wanted very much to try to help him. The head of the clinic David was attending had written them about him, and they were willing to pay the expenses for him to come for consultation.

David made a fine impression on the staff, speaking fluently and knowledgeably, and the staff was eager to have him come on a regular basis. This posed problems for the family, as the father had just gotten a new business started. It was decided that David was more important than anything in their lives, so his mother moved to the new locale with him while his father again put his business on the market.

For the next three years David was the focal point of various medical consultations, and the guinea pig in various types of therapy. There was considerable elation over one solution. At some time during this period it was decided that the reason David wasn't learning to read was the complexity of English. Eighteen months were spent teaching him Spanish because it was an "easier" language to learn than English. His parents obliged by learning Spanish also, and David kept out of regular classes so that he could absorb the language more rapidly. Although he began to speak Spanish quite well, he was still unable to read it. He was then fifteen years old.

A death in the family precipitated a move to another part of the country where there was no help available. It seemed of little consequence, however, because everyone had given up trying to teach him anyway, and the public school didn't seem concerned about him. The television program with which this account started rekindled hope in David's parents.

David turned out to be a tall, handsome boy who drove the family car

to the appointment with me. He was thoroughly charming, and there was no doubt that he was a conversationalist. But he spoke too much and said too little. His speech was full of generalities and clichés of the day, but logical sequential thought development was lacking.

When we sat at the desk he told me that he knew I had some tests to administer, and that he was a very good test subject. David said that he had had "every test known to man," but that he didn't mind taking them again. I realized that things were not going to go as planned this time. As I took each test out, David said, "I've already had that one at least a couple of times." When he saw the stop watch he cautioned me to observe the time limits carefully, and said, "Lot's of people don't do it right and really foul things up." He managed through diversionary tactics to invalidate every test, and I was glad that these were not really necessary in order to diagnose this case of specific language disability. That seemed to me to have been done years before.

David didn't "score" in reading. All he could do was to pick out a few words. He spelled at about a first grade level, but was unable to read what he had written. (Fig. 1.) He had great powers of evasion, and it was difficult to keep him moving ahead in either reading or spelling. There was no doubt that this was going to be an interesting case.

I asked David what he would like to accomplish along academic lines. He had some very lofty ideas, such as getting a "PhD in psychology or being an airline pilot." There were other more attainable goals, and as he spoke I wrote the more reasonable ones so that we could "establish priorities," as I called it. When he had finished, I read them to him and asked David to sign our "contract." After all, he had, with a little help, outlined the program himself, and for once he had made a commitment.

He had been surviving very satisfactorily as a nonreader, and I wasn't sure he really wanted to change his status. His driver's license test had been administered orally, and the shapes or colors of the signs made reading unnecessary. When he went out with a date, he asked the girl to read the menu to him, simply saying he couldn't read. Everyone thought he was kidding, but obliged by reading to him anyway. The only time David said he felt completely frustrated was when he would have liked to have been able to read a letter, or even a simple note, from his parents.

He was extremely secure with his parents. This was due, at least in part, to the fact that his father had had grave difficulties in reading, and had been unable to attend college because of poor academic ability. A program was

planned for David to begin working with me on a daily basis, and to have his mother read all the assignments in school classes to him. When she was not available to read them in the evening, she recorded the material earlier in the day so that he could "study" when he wanted to. This enabled David to participate in class discussion, and to feel somewhat responsible for his school work.

There were many old habits to break. Never was Gillingham's use of the word "retraining" more applicable than it was in this case. In the beginning, the precision of the work bothered David, who had always been able to evade specific techniques. For the first time in his life, he was either right or wrong, and there could be no argument. He came to accept the fact that errors weren't a personal criticism, and that they weren't so bad when one knew how to correct them. Next he reasoned that it was better not to make errors at all, and real thinking became obvious in his work.

David's strong auditory perception, developed through years of living by his wits and listening for the information he required, was a tremendous help in all of his learning. Spelling develped more rapidly than reading at first. Translation of sounds into written symbols, followed by reading the words formed, proved to be an invaluable exercise. Because his visual perception was weak and he instinctively recoiled from reading, spelling words were first written cursively, and then typed on the same paper. He was expected to read both forms. When something is painful one avoids doing it, and David literally refused to truly look at words until then.

The day David burst into the room shouting, "I can read! I can really read!" is one neither of us will ever forget. He had been driving down the street when he realized suddenly that he had read "One Way" printed on a sign. Until then David had not made the connection between reading in our class and reading in the world about him. From then on he searched signs for words he could read, and copied others with which I was to help him.

I had been awaiting the customary leveling off that comes periodically in the course of remedial retraining, but David was progressing so steadily that it seemed there would be no plateau. Neither he nor I was prepared for the depression which came upon him about a year later. Every student realizes from time to time that for everything he knows there is a great deal that he doesn't know. "No matter how much one learns one never reduces the amount he doesn't know."

Figure 1. David's spelling test taken by David at age sixteen when he was in the eleventh grade. (*Illustration at right.*)

ruan		run
top		-
read		rid
Book		-
see		sia
plack		play
llack		lay
laed		led
odd		-
		alike
Mind		mine
~~Weth~~	Weth	with
Eye		easy
shid		shut
don		done
B		body
enay		any
~~fifth~~		filth

TABLE 4. DAVID

	Fall (Initial Testing)	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Age	16		17		18		19	
Gray Oral Paragraphs	0	2.4	4.5		7.7[a]		11.3[b]	
Iota Single Word Recognition	1.1	2.7		5.5				
Morrison-McCall Spelling	1.7	3.1	4.7	5.8	8.0[a]	9.3	11.7[b]	
Gates Reading Survey								
Vocabulary			4.3		8.9[a]			
Comprehension			4.0		8.6[a]			
Diagnostic Reading Test								
Vocabulary							68% ile 12th grade[b]	
Comprehension							72% ile 12th grade[b]	

Note: This 16 year old student had advanced to the eleventh grade in high school prior to remedial retraining. When daily, individual, reading lessons began he started high school again as a freshman.

[a] Remedial teaching was terminated in the spring of this year.
[b] Fall testing was done to determine whether academic growth was continuing.

In the case of those having specific language disabilities, who are struggling to catch up with their peers, the amount of knowledge that lies ahead is staggering and time is running out. Blissfully, they are unaware of this at first; then, when they begin to cope with language, they are overcome by the size of the academic mountain blocking their way. If only David had been able to get the help he needed before this had happened!

His depression, as we referred to it later, occurred at a most inopportune time. The school which had passed him along with "psychological promotions" and let him fill his days with shops of various kinds, music, chorus, art, and a few "bonehead" courses, became unsympathetic as he reached the maximum age for compulsory attendance. They decided that he should leave

school, and turned a deaf ear to my progress reports and to the pleas of his parents that he be permitted to remain in school. We felt it was especially important that he do so at this point, as he was beginning to realize some degree of scholastic success.

The personal problems he was having, added to the attitude of the school, created a grim situation. He was torn between a desire to become an adequate student and a desire to "stop knocking my head against the wall" as he put it. Fortunately, David was an excellent football player, and the athletic department was fighting to keep him in school.

A conference was scheduled, and I sent copies of Anna Gillingham's article "The Obligation of the School to Teach Reading and Spelling" to the principal and guidance counselor. If ever a school were morally obligated, this was the time. It was interesting that David, who had grown discouraged and wanted to drift quietly off into limbo, suddenly got caught up in the discussion. I read the article to him, and he vowed that he was going to convince them that he was worth keeping in school. The school authorities finally decided that this was the best course.

David did convince them! He graduated from high school at nineteen-and-a-half, and went to a junior college. After two years, he enlisted in the Marine Corps and was promoted to the rank of sergeant. The various service schools he attended whetted his desire for more education, and when he returned to civilian life he continued his college education. When last heard from, David had received a bachelor's degree and was studying law. His academic achievement was a source of genuine pride for his parents, especially for his father who had never overcome his reading problem.

These students were not non-learners, nor are those in school today who have specific language disabilities. They are "teachable," yet untaught. Lacking success in learning within our system of education, they will seek success in less desirable activities. Delinquency, drugs, and promiscuous sex are all available substitutes but they need not use them if we answer this, "The Cry of the Children" in the twentieth century.

3. Jeff—A Case Study

Margaret B. Rawson

This paper was presented at the 23rd Annual Conference of the Orton Society in Seattle, Washington, 1972.

When Jeff's father, a doctor and descendant of doctors, knew he was going to die he was pretty sure his daughter, aged seven, would be all right with her mother and a host of other relatives, but he was worried about Jeff. Already, at two, the boy was hyperactive and hard to manage and there was the nagging question of what could be wrong with him. Something surely was, though his birth and "mile-stone history" were okay and he seemed to have no sensory deficiencies. (His father didn't know the significance of his own slow reading, poor spelling and handwriting, for which he had compensated by industry, perseverance, and strength of personality.) Could Carol, the boy's mother, bring him up alone even though money would not be a problem? Jeffrey, Sr., feared not. So he called in a friend and colleague, confided his worry and appealed, "Doc, if you and Louise will just promise to keep an eye on Jeff as he grows up with your Bruce these last weeks will be a lot easier for me."

Of course Doc and Louise assured him and they kept their promise, helping Carol and seeing to it that all Jeff's needs were met as far as they could know them. But he was a difficult child, always in motion though often stumbling, poking his fingers into everything, and an incessant chatterbox. In school he "learned nothing about reading in the first two years." Then his mother tried parochial school, though the family was non-Catholic, "because they have better discipline." But there were 71 children in the class with a relatively inexperienced lay teacher, so even repeating grade 3 wasn't helping much when I first met Jeff.

I'd been working a few months with Doc and Louise's son Bruce who, at eleven, was a rather different kind of dyslexic (aren't they all?). So when Jeff was nine years old he came to me for tests. That's what my records say, but my memory is of "an immature eight year old." His Bender drawings were characteristic of a six year old. He simply could not roof the house he drew, which he said was a "fire hazard, infested with termites." Drawing a

person was a "lost cause" until nearly two years later when, at eleven years of age, he produced a cheerful little stick figure who was, he said "about eight"—as Jeff himself seemed then to be emotionally.

And yet his Binet IQ and later his verbal and full-scale WISC hovered around average with performance items lower than his verbal ones. There was wide scatter with lows in the "borderline" area and once, at age fourteen, a Comprehension score which was above 155 IQ equivalent. Clearly, all we could say was that Jeff was of at least normal intelligence, a highly verbal child who sometimes did a good *spontaneous* job of abstract thinking but not when someone else set the problem. His attention was so volatile and his memory so poor that he could not hold a problem in mind long enough to solve it if the answer was not immediately apparent. He was full of inconsistencies, failing (at age nine) the Binet diamond test which should be passed at year seven, and both paper cutting and designs, but tossing off an easy win on the plan-of-search typical of children of year thirteen. These were typical of the welter of Jeff's inconsistencies.

A learning problem, though, he certainly did have. At age nine he scored at barely second grade level in reading, and at third grade in spelling and arithmetic as a result of hard work and of a degree of rote memory which later proved quite inadequate. He had atrocious handwriting and made all the classic reversal and other "dyslexic" errors and a few extras.

His reading word-attack plan was to spell the offender aloud and hope for the best. This and some other inadequate devices were held onto like Linus-blankets and certain infantile ideas also died hard. "Little engines do so grow up to be big ones!" and, "Sure. If you break open a dime you'll get ten pennies."

What to do? We made a beginning, the standard Orton-Gillingham kind, tailored to his limitations and needs, and insisted on realism and rationality in arithmetic. For the first time Jeff and his mother saw progress. I was often discouraged, but Jeff liked to come and his mother pleaded with me to keep on. And this was how it was to be for six years—twice as long as I usually think it wise for one therapist to keep a student. By the time he was in eighth grade, he was reading a half year above grade level and with some enthusiasm; spelling and computing (with extra test-time) at mid-seventh grade level; and writing a legible hand.

It wasn't all tutoring in our sessions, though I did hold him to his work. (He would have preferred conversation.) We did spend a lot of time in the casework or "character development" process, too, for I had to take

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literally his mother's plea to help her bring him up. She was right—she *couldn't* do it by herself. Doc and his wife and son helped, too, and so did the minister and some other father-figures Jeff chose for himself. He became more mature, and his concern for other people, his effervescent personal charm and other qualities blossomed. He developed insight beyond his years and some ethical standards in place of his earlier "because its proper" social conformity, and he worked very hard.

He failed admission to the highly academic prep school of his mother's choice, but did get into an easier one where his personal qualities were admired and encouraged but where no further dyslexia-related help was available. The second year he received, to his own surprise, the school's top award for "the boy who has given the most of himself and done the most for the school." His grades were not spectacular but he continued to work hard, deliberately used the techniques he had learned in therapy (as he still does at 26) and deeply regretted that he couldn't pass them on to some failing friends. He came to the realization that neither medical school nor the Ivy League university of his first choice were for him. He considered the ministry but finally settled for a somewhat less linguistically demanding college program and a major in business administration (long ago suggested) for which he had real aptitudes.

At college, still in earnest and working hard but having a good share of college boy activity and fun too, he began with a Freshman average just barely above C. Gradually he did better, especially as he got into economics, business, and marketing where his real interests and talents lay. In his Senior year his mother called ecstatically to report that he had made the Dean's List!

He graduated and married his four-year sweetheart, an English major (a wise feature of the choice on his part, but quite a secondary consideration, it is obvious when one sees them together). She taught fourth grade, and, to everyone's surprise, he spent two years as a successful high school teacher, while he took some evening courses in the University Graduate School of Business, and made B- grades. Thus encouraged, he became a full-time graduate student in summer school. The courses were fine, but the requirement that he make a score of 25 or better in the Miller Analogies Test nearly finished him. He scored 11 on the first try and 16 the second time. He had to make it the third time or drop out of the graduate program. As had happened several times before in crisis, he frantically called his old therapist. The trouble was obviously in abstract verbal reasoning, for which requirement this test is famous. The therapist looked back over Jeff's record of a

decade earlier and found a score of 8 in the relevant WISC test, "Similarities" coupled with a 19, or almost top score, in the more concrete and practical test called "Comprehension." I suggested, following our hour-long telephone consultation about test-taking, a stiff crash-course in general semantics (Hayakawa and Wendell Johnson) and a high-school book on logic.

He went to work with customary vigor and a lot of help from his wife who stressed the non-economics vocabulary. After the test he called with triumph in his voice. "Guess what?" "Obviously at least 26." "Guess again!" "Not 35?" (The doctoral admission level.) "Nope, FORTY-FIVE!!"

With that as tonic, and with his wife proof-reading all his papers, he delivered three trimesters of straight A's and received his Master's degree *magna cum laude*. In a candidate-class of 1,019 students he was top man. (Announcement of this came to me from his mother and directly from the university.) Even in the lean-employment year of 1972, Jeff had his choice of several jobs, three of them especially lucrative and promising. He chose the most challenging, with earnings commensurate with its difficulty, and he gives every evidence of being well-launched on a successful business career. The course notebooks he showed us on a recent visit still have the "dyslexic look," but he obviously knew what he had written and talked intelligently of the content of his professional library on macro- and micro-economics and similarly (to a mere language therapist) arcane matters. A book, given to him by a favorite professor, bore the inscription, "To a wonderful guy, and the most promising student I have ever had."

Where, now, is that roofless, termite-infested fire-trap which characterized Jeff's opinion of himself at age nine? Both the emotional and the language learning problems were real, and both now seem to have been largely solved. Jeff is still basically the same person, but hyperactivity and distractability have developed into drive and creative ingenuity; his own determination and hard work and the faith and support of his mother, his wife and his schoolmasters have seen him over and around the road-blocks to academic achievement and good business judgment; and his capacity for warm, outgoing human contacts is freed for both personal and business relationships.

If Jeff can do what he has done, none of us need ever despair again about our young charges. The next "Jeff" will be different, as they all are. Still if Jeff is true, what, then, is impossible? He is spectacular, but he is not unique in the annals of the adults many dyslexic boys have become.

4. Dyslexia—As Universal as Language

Our colleague, Dr. Zdeněk Matějček of Prague, Czechoslovakia, has sent us the following letter as one more piece of evidence that "it's the same the whole world over." He says, by way of preface, "Here is an anonymous letter which we received as reaction to our TV program, 'The Book is My Enemy,' put on in the summer of 1972. An Australian lady who was here for a visit translated the letter into English, and I thought you would like to read it. It might be that the readers of the *Bulletin* also would find it interesting. At least, this case is directly in line with the results of your studies of intelligent American boys."

Dear Sirs,

Until now I have never reacted to a program on television or radio, and I am almost sixty years old. Your program about people who are unable to learn to read moved me to the extent that, for the first time, I am reacting, even though anonymously.

I am one of them. I am ashamed of it, and, therefore, my signature is missing. I have, in all, six academic degrees and titles such as Dr. Sc., and Professor (Univ.), etc.

It is a great disadvantage to a person in my position, but it was worse in elementary school. In secondary school, in sixth grade, my Czech teacher, who is still living, rescued me in the true sense of the word. My reading was always an entertainment for the class, but for me it was suffering. Once he realized my lack of ability, my Czech teacher stopped the merriment at my expense and took the time to find out from me that my father was a doctor, that he knew about my disability, that he knew what it was called, but that he would not come to the school to pull any strings. My older brother and sister had studied with distinction and he felt there was no need for anyone to keep running to the school on our behalf.

With reading, I was subjected to hard training even during the holidays. By my judgement, the outcome was quite negative. By my judgement, the only firm influence was the personal support of my Czech teacher.

Before the war, I managed to complete the University course in record time and with distinction almost throughout. I wrote to my Czech teacher about this—I had never excelled in his class. He replied, "There you are—they took you for a fool and you beat the whole class. I'm pleased with you, just keep going." Then I graduated again, in another faculty; then I was appointed a University lecturer; then I got as far as the examination in

Russian for my C.Sc. (Candidate in Science) and there was trouble again with the Russian alphabet. But I was recognised as a professor and the lecturers thought I was joking. I was terribly nervous and feared disgrace. Maybe my lie was partly believed—I blamed my glasses.

I experienced an amusing situation during my army service before the war. I was first in officers' school, beating two eminent scholars and two "Laureates of the State Prize." I came to my company, and as dux among the reserve officer candidates, I had to read the daily orders. This was a real joke. The worthy, intelligent commander and others thought that I was imitating those who simply couldn't read but still held rank. I was far from making fun of anyone in this regard, but I managed to survive even this.

Today I read Czech aloud in such a way that, if no one were to tell you of my problem, you would not notice it. In Russian and in English or French, even in German, it is noticeable. When, occasionally, I have had to lecture in a foreign language, I have practised beforehand.

I don't know what your methods are, if you have any at all, for overcoming this problem. I think that such children would be helped by putting them into separate classes and by avoiding making them read aloud. It was of some help to me after Grade 6 and at the University not to have to read aloud. I remember that I was quite advanced in my studies and respected by the family when, on one occasion, my father asked me to read for him so that he could judge if I'd improved. This time he considered that my reading was just about normal, but he could recognize that I read with such effort as to have difficulty with my breathing. Even today, quite often I cannot manage to read the titles in the cinema.

Amongst my relatives, no one appears to have this disability to any great degree. Father is certain that I get it from him, since he, also, does not read well. He reads extremely fast but simply has no feeling for intonation. One of my nephews, a doctor, had a slight problem somewhere around first grade of primary school. My son is studying at one of the best universities and, so far, he has gained only distinctions. He reads so unbelievably well and quickly that I have found it hard to believe. We did a test: I produced 100 pages of normal, quarto text which I knew well. It was a text from my own publication. He read it through in 46 minutes and comprehended the content perfectly. I needed four hours (25 pages per hour). I am delighted that he did not inherit my defect.

Forgive my anonymity, but perhaps you realise that "a hunchback does not like showing his hump."

Books and Children— An Open Letter from a Mother to Her Married Children

Dorothy Tower

This paper was commissioned as an extension of the original letter which its writer shared with me because of our common interest and points of view in the field of children's books. With the paper came this comment: "You know, of course, that you gave me an impossible task. 'Be sure to mention the names of books,' you said. But you know that right there I am opening myself to all sorts of criticism, such as: 'She didn't tell us about any of the new books; she just mentioned the same old ones we knew about already.' 'But she didn't mention Dr. Doolittle, or Hans Christian Andersen, or *Make Way for Ducklings*, or *The Borrowers*, or *The Hobbit*, or *Robin Hood*, or science, or biography, or. . . . .' So, I'm damned if I do and I'm damned if I don't. It is one thing to write an introduction to a book list that I've been compiling for 30 years—with the book list there to look at; it is another to try to choose books that almost any child might like at one time or another, and to keep the whole at article, rather than book, length."

Bibliographic information is not given here, for it can be had from any good children's library or book on children's literature; this is a point-of-view letter, with for-instance citations. May other readers enjoy it as much as I have, and may some of them be moved to write further on "the right book at the right time for the language therapy child." People who want a single word for it sometimes call it "bibliotherapy."

—*Editor*

Mes Enfants:

Now that each of you is enthusiastically embroiled in the joys and rigours of parenthood, I will risk volunteering some words of advice. No, I am not going to tell you how to bring up your children—that is your responsibility and privilege. However, I cannot resist the temptation to offer my opinions on what I consider to be the two necessary pieces of equipment in every home where there are small children: one bookcase per child, containing books; and at least one adult who is willing to read a few minutes daily to each child separately.

The bookcase can be an old wooden orange crate (if you can find one any more), or some wooden boards on concrete blocks. But it should be low enough for hands of a small one to capture and pull out his own books to look at and, in time, to read.

The adult can be either parent, but whoever is elected for the day

should *want* to take the time to read aloud with each child. If you are worried about dinner burning in the oven, or being late to a cocktail party, your child will sense your preoccupation, and neither of you will enjoy the story time; it will become just another chore. Those of you who are "ex-dyslexics" may feel that you are unable to read aloud without stumbling. Don't worry, your child will not be as critical of your oral reading as you are; he will be more involved in the story and in the person reading it than in how it is read. (You might even become more fluent with practice!) But be sure your child has the experience of being read to by both parents—one parent ought not to have all the fun. Of course, when your child is old enough to choose the stories he wants to hear, you will have to have the patience of Job and the acting ability of Sir Laurence Olivier to be able to read even the delightful *Mike Mulligan and His Steam Shovel*, for example, for the seventeenth night in a row. Once you've introduced Mike, you could try to substitute a choice of your own, but it usually doesn't work. Don't despair; soon Mike will be displaced by some other storybook character, particularly if there are plenty of books available from which to choose. I learned early to try to foresee which books I could re-read with enthusiasm until you were ready to move on, or, when you chose them for later re-runs, which would be *my* welcome old friends, too. I enjoyed enjoying books with you and wanted to be able to do it whole-heartedly.

In your families, with your own children, in your homes, the challenge of diversion to television is markedly greater than was the case in our family when you yourselves were growing up. Without direct experience, therefore, I am not qualified to offer my two cents' worth on how to balance these two oh-so-different forms of intellectual stimulus, each of which offers its own particular potential. With all due respect to the good television programs for children, however, being read to exclusively by a loving parent from a book of one's own choice obviously is greater evidence of attention than is turning on the largest screen color television. Pulling out one's own choice from one's own orange crate bookshelf may offer broader scope for flights of imagination than the most thoughtful of TV programs.

All right, you have the bookcase, and you are willing to embark on one of the most rewarding and exciting experiences of parenthood; the bringing together of a child and a book. Which book? At what age should you start? When will your child be ready to listen? Let's take the last question first. The other questions will follow from that.

Your child has been listening since he was born; he learned to distin-

guish between different voices before he could see clearly; you've sung and said nursery rhymes to him as you jounced and cuddled him. He's responded with smiles and gurgles. You've already started him on his way toward books. He likes the music, the rhythm, and the rhyme; it really doesn't matter whether the words make sense. John Masfield, Vachel Lindsay, Carl Sandburg, Edward Lear, Hilaire Belloc, Walter De La Mare, A. A. Milne—any singing poetry or prose will do. Soon he will be grown up enough to sit on your lap, fresh from his bath, relaxed, sleepy but not quite ready for bed. The time is ripe for you to reach for *The Real Mother Goose,* or William Enquick's *Lullabies and Night Songs,* showing him the pictures as you read the verse. Together you can "read" cloth and heavy cardboard books that show pictures of familiar objects: shoes, balls, dolls, blocks, houses, animals, people. *Pat the Bunny* will make him a participant, as well as encouraging him to combine his senses of sight, hearing, and touch. He will like books that require his involvement, such as Margaret Wise Brown's *The Noisy Book* and Ann McGovern's *Too Much Noise,* and will joyously shout the answers to the questions asked. He will love the repetition of words and phrases in such books as Wanda Gag's *Millions of Cats,* Marjorie Flack's *The Story of Ping,* Sara Cone Bryant's *Epaminondas and His Auntie,* Beatrice Schenk de Regniers' *May I Bring A Friend?,* and Wally Piper's *The Little Engine that Could.* Any of Richard Scarry's books will give both of you a chance to make up your own stories about the pictures. Before you know it the bedtime ritual is established. You're hooked!

Fortunately for your pocketbook, many old, loved books are being reissued in paperback, such as Marjorie Flack's books about Angus, the engaging Scottie dog, Elsie Minarik's *Little Bear,* H. A. Rey's *Curious George* series, and Ezra Jack Keats' *Whistle for Willie.* New books, too, are being issued in paperback. One of these, Alvin Schwartz's collection, *A Twister of Twists, A Tangler of Tongues,* will send your youngster into gales of laughter; he will want to try his tongue around the twists too, thereby helping the clarity of his own speech. Be sure not to forget that glorious jester, Dr. Seuss. *Yertle the Turtle* and *Horton Hears a Who* will bore you long before they are tucked away and forgotten in your child's bookcase.

You may feel that he is too young to respect books when he's two or three years old; that he will tear them and mark them up. Of course he will tear them and mark them; not because he's malicious, but because he likes them and wants to "read" them, too. Books are meant to be used, not left on a shelf. (Your own books can be put away on shelves too high for him

to reach.) Scotch tape, heavy masking tape, and a gum eraser can salvage many a favorite book. And the page that cannot be read because it was torn out may serve as a reminder that one doesn't tear books to pieces. In time he'll learn to respect his property, especially if he sees that you take care of the books you read and insist that he respect them too, when he has the special privilege of inspecting some of them.

Now let us return to the question of which books you should read to him. The book publishers pour hundreds of children's books onto the market each year. I've found that a good safe rule is to begin with the books you liked when you were little. If they are still in the bookstores they have stood the test of time. Lois Lenski's *Farmer Small, Little Toot* by Hardie Gramatky, Kipling's *Just So Stories*, and *Ferdinand the Bull* by Munro Leaf are still around and going strong. No child (or adult, for that matter) should miss Kenneth Grahame's *Wind in The Willows* or Robert Lawson's *Rabbit Hill*. If your memory fails you, buy a paperback copy of Nancy Larrick's *A Parent's Guide to Children's Reading*, or M. H. Arbuthnot's *Children's Books Too Good to Miss*. Visit the Children's Book Room in your public library with pad and pencil in hand. Or better yet, take your child with you to the library. Many public libraries have story hours for the very young, and older children can browse to their heart's content. A library card, unlimited time, uncensored freedom of choice, regular visits, and a sense of responsibility for borrowed books can have more meaning for a child than all the fancy gift editions showered by doting and well-meaning relatives.

Then, too, the public library will have the out-of-print books you remembered, with the Howard Pyle or Arthur Rackham illustrations: *Otto of the Silver Hand, Peter Pan in Kensington Gardens*, and *East of the Sun and West of the Moon*. Never pass up a chance to prowl through a second-hand book store. Only a few years ago I came across a book I loved as a child but which had long been out of print, *Gabriel and The Hour Book*, by Evaleen Stein. It was like meeting an old friend. If you really get interested in the field of children's literature, subscribe to *The Horn Book*, and peruse the public library book lists. But a few words of caution: don't try to get your child to listen to or read a book because it is 'good' literature or just because you liked it (some of your favorites will *not* have stood up under the changes of the times); give him a chance to roam freely, nibbling here and there. He may devour everything one author has written; for a long period he may demand nothing but horse or mystery stories; but in time he will move on to other kinds of books. I remember when one of you started

on Arthur Ransome's *Swallows and Amazons,* and we couldn't pry you loose until you'd read all his books. Another of you "found" E. Nesbit's *The Bastable Children* and Ed Eager's *Half Magic,* and we read nothing but Nesbit and Eager for the next six months, finishing off with Norton Juster's *The Phantom Tollbooth* and Carley Dawson's *Mr. Wickers Window.* Then there was that year when we lived with Laura Ingalls Wilder's children, Eleanor Estes' Moffat family, Marguerite Henry's horses, and the adventures of Mary Poppins, all at the same time. I almost felt a sense of relief as each of you gradually took over your own reading. Yet we still had those evenings when we read together as a family. You remember *Puck O'Pook's Hill* and *Stalky & Co., Treasure Island* and *Kidnapped,* the Greek and Roman myths, *Robinson Crusoe, The Sword in the Stone, Swiss Family Robinson,* and, on every Christmas Eve, as a ritual revered well into adolescence, Maude and Miska Petersham's beautifully illustrated King James version of *The Christ Child?*

Publishers have a bad habit of putting books into age categories. Yet each child's interests are uniquely his, and you will be insulting him if you use age as a benchmark for choosing a book. Many books labelled for older readers can be read aloud to and enjoyed by a younger child. Several books may be read and liked at two different age levels for entirely different reasons. *Alice in Wonderland* is a good example: age eight may enjoy it for its magical nonsense; sophisticated fifteen sees that Lewis Carroll was poking fun at people and events, and you, yourself will find new implications each time you reread it.* A book may not "take" at first, but in a year or two it may be read and reread. Yet again, it may never be liked.

If you think back, there were some books you read that created for you a separate, special, private world of adventure or exploration or stimulation of new ideas; you did not want to share or discuss them with anyone, nor did you want a grownup invading or trying to share this private world that was all yours. Yet there were other books which seemed to invite discussion, and about which you and your parents could freely and impersonally (or even personally) talk. Respect your child's privacy, but do keep up with what he is reading so that you are ready for that rare moment when he wants to try out his ideas on you.

There are so many books for every taste to be found in the public

* A philosophy professor we know makes *The Phantom Tollbooth* required reading for his college students. The reader might try looking at it in that frame of reference. —Ed.

library, why should one buy books once the child grows beyond the destructive stage? To answer this question, I must hark back to the feelings and reverence that my father, your beloved grandfather, had for books. He had very little money as a boy and as a young man earning his way through college, yet he felt that if a book was so good that he might want to reread it or if it was one in which he might want to make marginal notes, then he should buy it. It was then his to pick up and savor whenever he wished—it became a part of his life. I followed this precept of his, and have tried to hand it on to you. You remember that as you were growing up, you each had a small monthly credit at the bookstore, so you could build your own library. At times I wondered whether this was wise, particularly when one of you bought every *Peanuts* book as it was published, and another of you went in heavily for the Bobbsey Twins. But as you grew, your tastes in books became excellent and quite individual.

One last piece of advice: do not "urge" your child to read. He will read when he wants to, but not if you give him the idea that it is good for him. (When he is in high school, he'll probably tell you he wished you'd "made" him read such and such a book—ha!) In fact one of my friends is sure that the reason she read so much as a child was that her father kept telling her to take her nose out of a book and *do* something.

May you have as much fun as your father and I have had when you share your favorite books with your children, and when you find new ones that you can all enjoy. May your children, too, get "hooked on books."

Love,

Mom

REVIEWS

General

The Systems View of the World: The Natural Philosophy of the New Developments in the Sciences, by Ervin Laszlo. New York: George Braziller, 1972.

This is a refreshingly mind-opening introduction to modern General Systems thinking, one of the most productive modes of current scientific intellectual activity. ". . . only if we know both where we are and where we want to go can we act purposively in science about getting there," says the author. General Systems philosophy is a fully scientific antidote to "Skinnerian" mechanistic views of man and society.

"Feedback: Beyond Behaviorism," by William T. Powers, in *Science*, 26 January 1973.

Another commentary, with philosophic implications, on the problems of purpose and decision in human behavior, and some "serious doubt [about] the ultimate feasibility of operant conditioning of human beings by other human beings," who do really seem to have more options available to them than do experimental animals in "Skinner boxes."

"The Asymmetry of the Human Brain," by Doreen Kimura, in *Scientific American* 228(3):70–78 (March 1973).

The right hemisphere of the brain (in most people), long thought of as "the silent partner," the "subordinate" or "subdominant" half of the organ of the mind, seems now to be coming into its own as a full partner in charge of man's perception of his environment. Unable to "speak for itself" because speech is centered, ordinarily, in the left hemisphere, it has functions of its own, in spatial awareness, in music, and in many other aspects of life which are different from, but of equal importance with, speech in the human endeavor. This most important article, taken together with Geschwind's

papers previously published or reviewed in this *Bulletin*, provide a balanced view. This is an excellent paper, with both text and illustrations of the usual high *Scientific American* caliber. Strongly recommended.

"Right and Left Thinking," by Robert E. Ornstein, in *Psychology Today* 6:12, 86–92 (May 1973).

A popular presentation of some of the findings about hemispherical dominance for language and other functions, and some astute speculation about the implications of recent findings. This, as well as Kimura (above) are pretty exciting fare for Old Orton Hands!

"Unilateral Cortical Activity in Newborn Humans: an Early Index of Cerebral Dominance?" by David H. Crowell et al., in *Science* 180(4082): 205–207 (13 April 1973).

A technical report of EEG findings showing right hemisphere dominance for response to rhythmic visual stimuli, lack of interhemispheric integration, and raising questions about genetic nature of hemispheric specialization.

Piaget's Theory of Cognitive Development: An Introduction for Students of Psychology and Education, by Barry J. Wadsworth. New York: David McKay Co. 1971.

Those who have found Piaget's own books rough going, and those of his interpreters hardly less so—and that means most non-specialist American readers—will find this 134 page volume a welcome introduction or clarifying review. Designed for college undergraduate beginners.

Language by Ear and by Eye: The Relationships between Speech and Reading, James F. Kavanagh and Ignatius Mattingly, eds. 1972. Cambridge, Massachusetts: M.I.T. Press.

The reviewer's copy of this volume is not yet in hand, but on the basis

of a synopsis of one paper by Donald Shankweiler and Isabelle Y. Libermean with content related to the latter's paper in this issue, the general orientation of the editors and probable other contributors, and a very enthusiastic evaluation by a colleague whose judgment about books is an excellent guide, it seems not only justifiable to call the book to our readers' attention, but that it would be a disservice to withhold it from our lists until next year.

Child Language and Education, by Courtney B. Cazden. 1972. New York: Holt, Rinehart and Winston.

". . . Written for anyone, researcher or teacher, who seeks to improve children's communicative adequacy through education." This is a text in language-about-language for serious, but not necessarily sophisticated, professional level students of this most important of all aspects of child development—for whom it bids fair to become required reading.

Psycholinguistic Learning Disabilities: Diagnosis and Remediation, by Samuel A. Kirk and Winifred D. Kirk. Urbana, Illinois: University of Illinois Press. 1971.

Designed to help users of the Illinois Test of Psycholinguistic Abilities (ITPA) to interpret results and to design remedial procedures in the light of test patterns of strengths and weaknesses, this book first discusses the nature of learning disabilities and their relation to the test designed to explore them. Research studies and examination procedures, suggestions for analysis of results, and guidelines for remediation all help to make this a useful book for those working in its orbit. The suggested teaching is clinical, rather than commercial-cookbook in orientation, with emphasis on as exact pin-point diagnosis and matched treatment as is possible, with flexibility and ingenuity high on the list of desirable qualities in developing materials and adapting those available to particular needs.

"The Influence of Writing-System Characteristics on Learning to Read," by William B. Gillooly, in *Reading Research Quarterly* 8(2):167–199 (Winter 1972).

An important statement of the relationships between phonologic, phonographic and orthographic representation of meaning in English words. There is a relationship between sound and spelling, but often the meaning determines spelling of phonologically ambiguous words, making the "irregularities" of our written forms important positive factors for conveying the message. There is too much here for review; better read the whole paper.

Ancient Writing and Its Influence, by Berthold Louis Ullman. Cambridge, Massachusetts: MIT Press. Paperback. 1969. (Originally published by Longmans, Green, N.Y., 1932.)

A classic deservedly rescued from limbo by the modern paperback reprinting policy. "Though the sword of Rome has failed, its pen has triumphed," so does the author end his very readable history of our alphabet, with emphasis on old Greek and Latin forms of writing. An adult book of 223 well-set, clearly written pages, which will be useful to older students with a special interest, to teachers, to linguists, and to the general reader.

"The Chomskyan Revolution," by Daniel Yergin, in *New York Times Magazine*, December 3, 1972, pp. 42 ff.

Chomsky is the personality, but modern linguistics is the subject interestingly explained in the rather long and complete presentation. Worth looking up!

Language Development: Form and Function in Emerging Grammar, by Lois Bloom. 1970. Cambridge, Massachusetts: M.I.T. Press.

As a child learns his native tongue from those around him, he acquires, or develops from within, a usable sense of grammatical structure and function, which is here described systematically. There are illustrations from the language behavior of three children late in their second years. A glossary of the linguists' notation and terms is a useful feature.

"The Chinese Language," by William S-Y. Wang, in *Scientific American* 228(2):51–60 (February 1973).

Understanding of the familiar (our own mother tongue) is sharpened by the understanding of something quite different (the Chinese language).

This, to most of us Occidentals, hitherto bafflingly difficult language system is here interpreted with clarity and felicity. With some knowledge of its structure we can begin to understand the advantages of its ideographic writing system and some of the different and mutually nonunderstandable dialects which it symbolizes for over 500 million people. An important light is thrown on the history and culture of China, whose language still seems difficult but now somewhat less of a mystery to the speaker of an Occidental tongue.

You Can Write Chinese, by Kurt Wiese. New York: Viking Press, 1945, now in paperback, $.95.

Peter Parish, an American boy in a Chungking school, learns the fundamentals of Chinese ideographic writing, under the tutelage of the kindly, sympathetic Chinese schoolmaster who is so typical of Kurt Wiese's timeless characterizations. It does look comparatively simple and comprehensible in this most elementary lesson—well, perhaps. But the important thing is that we have here a fine example of the way Chinese writing differs from our own, and, with a bit of explanation added, some idea of the nature and beauty of Chinese calligraphy. (See, for an adult version, the review of Wang's article "The Chinese Language," above.)

A Cultural History of Numbers, by Karl Menninger, translated from the German by Paul Broneer. Cambridge, Massachusetts: MIT Press. 1969.

A scholar who is a good story teller and an entertaining writer and who is blest with a gifted translator can, and here does, produce a big, beautifully composed, well-illustrated book about "number words and number symbols" and the history and meaning behind them. A book for browsing and for reference, not for reading through. The Press is right when it says that the book ". . . will fascinate equally readers with an ear for words or with a head for numbers."

"The Origin of Number Concepts," by Charles J. Brainerd, in *Scientific American*, 228(3):101–109 (March 1973).

A still newer "new math" is perhaps suggested by this study of the way

in which children become aware of number sequences and relations. It seems that "one, two, three . . ." comes first, and only later are sets and classes comprehended. Several interesting and ingenious experiments are described. It will be interesting to compare these concepts with Piaget's findings and, even more important, with what our own real children can do and think about.

Specific Language Disability

Reading: An Auditory Vocal Process, by Alexander Bannatyne. San Rafael, California: Academic Therapy Publications. 1973. Paperback.

The size and price and all-inclusiveness of the author's *Language, Reading and Learning Disabilities*, reviewed here last year imposed certain limitations on its wide purchase and use among individual teachers. He was, therefore, persuaded to issue a summary (96 page) statement of his point of view. The summary covers his most important concepts and the reasoning behind them. This is a carefully reasoned and clearly stated account which should be most useful to diagnosticians and therapists in the field of developmental dyslexia.

The author analyzes the well-known language processes of listening, speaking, reading, and writing, associating with each an appropriate aspect of symbolization: phonemes (the basic *sounds* of language), articulemes (the sounds as *spoken*), optemes (his coinage, to make the set complete, the *visible forms* of print), and graphemes (these forms as we *write* them). The expansion of this set of concepts and its use in ordering the language and language learning processes, leads, through diagnostic assessment and those pedagogic methods which seem best to him, to preventive and remediative education. Modern concepts of linguistics are made good use of throughout.

Whether one agrees fully with everything the author says or recommends, or only with a large part of it, as does this reviewer, one must find this a stimulative, informative, and useful little volume by an innovative and rational theorist-practitioner.

Can't Read, Can't Write, Can't Talk Too Good Either: How to Recognize and Overcome Dyslexia in Your Child, by Louise Clarke. New York: Walker and Co. 1973.

An account, both moving and engrossing, of the struggles of Michael Clarke and his family with his severe language learning difficulty as it manifested itself in his early speech and language development and in all the too familiar battles with reading, spelling, writing and other language skills. As the tale progresses, Mrs. Clarke intersperses clear statements of her later-acquired understanding of the nature of the problem. In one chapter Mike dictates from his memories of his own experiences. His mother's reassessment of his schools and her visits to others after he is well beyond their halls compietes the picture. (The appendix telling of facilities elsewhere is, by reason of its incompleteness, virtually useless and, we think, may best be disregarded.) An appreciative and approving Introduction by Dr. Archie A. Silver, however, authenticates the story and gives it an excellent send-off.

Most of the adults in Mike's life tried hard to understand and help this likeable, intelligent, baffled child. His three justly famous schools did their best for him and gave him, on the whole, a sound educational foundation in many important ways, despite their almost complete lack of information about his kind of language learning patterns. They were as frustrated as he by his, to all hands inexplicable, failures. Eventually he was dropped from college, found out about dyslexia, fought his way back into the mainstream, achieved his undergraduate degree from Harvard and his doctorate in the scientific field of his choice, where he is now a responsible and effective researcher.

All of Mike's life, as he and his family now know, could have been far easier had they known the nature of his problem in his childhood. His first school, in fact, would now unquestionably know how to recognize his learning needs and has a program well-designed to help his younger counterparts. There are more such schools today, but even yet, as Mrs. Clarke points out, they are far too few, even in the City of New York.

It is hard to lay down this book until the story ends—a story in which many people played parts for good or ill, a tale we all recognize, and one so well told that we find ourselves living in the recounted experience, enjoying being part of this vivid, high-hearted family, with all its courage and faith in the midst of difficulties and reverses, and its humor, sometimes wry or poignant but never mawkish or sentimental. We are grateful to Mike for allowing his story to be told and to Louise for telling it so entertainingly. She rides a fine ridge trail without ever going over the edge of overdramatization on the one side or unreal "objectivity" on the other. She is concerned and wholeheartedly involved, but can also be with her readers looking on,

in the best "participant-observer" tradition. One feels her to be the epitome of all those mothers and fathers, eachers and physicians and the many others, at least one of whom each dyslexic (especially, among troubled children) needs to have by his side as he works his way toward the kind of wholeness and achievement we know is possible for him.

For its imparting of understanding and its inspiriting lift, this is our Book of the Year. Jonathan Livingston Seagull, move over and make room for Michael Clarke and his chronicler!

Dyslexia: Problems of Reading Disabilities, by Herman K. Goldberg and Gilbert B. Schiffman. New York: Grune and Stratton. 1972.

The objectives and design of this book are fine—multidisciplinary description followed by educational prescription—but they are unevenly attained. Some of the writing is felicitous, but there is also some confusion (as when Rabinowitch's categories of primary and secondary reading disabilities are reversed), and little that is new, or even adequately particularized, on the educational front. The best contributions are an excellent statement of the ophthalmologist's point of view and the plea for early preventive action.

Report to the Governor and the General Assembly of Maryland: Commission on Dyslexia, submitted by Robert B. Chapman, III, for the Commission, September 27, 1972. Copies can be requested from the Governor's Commission on Dyslexia, Box 402, Cockeysville, Md., 21030.

This report is based on voluminous testimony from all segments of the population with interests direct or tangential, heard in meetings held for the purpose during the year 1971–1972, by a Commission of 20 members with five additional liaison representatives from State departments. The extent of the problem, its dimensions, and legal aspects are summarized, conclusions are drawn, and specific recommendations for legislative and administrative action are made. Some supportive material is given in several appendixes.

The document is brief; the main body runs to only 40 pages. It has, however, already been widely sought and used. Perhaps the best appraisal of its effectiveness is that of the Governor himself, in his letter addressed to each Commissioner on May 23, 1973, near the termination of the appointment:

> On Monday, May 21, 1973, I signed into law Senate Bill 469. As a result, all children with educational handicaps in the public schools of Maryland will be offered an educational program to meet their specific needs.
>
> Many positive forces contributed to the achievement of this goal. The vital work done by the Commission on Dyslexia is the one most worthy of special recognition. Beginning in September, 1971, the Commission relentlessly examined the problems of the learning-disabled child. Your report, presented to me last October, was a major factor in my decision to urge enactment of the reform legislation which now becomes law.
>
> Therefore, I wish to take this occasion to again express my appreciation to you as a member of the Commission on Dyslexia. Even though your official tenure will soon end, the findings and recommendations of your group have made a lasting contribution to the educational well-being of thousands of Maryland children.
>
> Sincerely,
> (Marvin Mandel)
> Governor

Progress is, indeed, built of many things, including such citizen-initiated proposals to government as this, with its ensuing cooperation among many hundreds of persons at all levels and with diverse interests and motivations in the field of common concern. Here is a currently much-needed piece of evidence for the viability of the democratic process.

My Child Can't Read, edited by Ellen B. Hamilton. Prepared for and published by The Citizens' Committee for Reading, Inc., 5111 Battery Lane, Bethesda, Maryland 20014. 1972.

This is a handbook for parents. It was prepared by both parents and professionals in the interest of their joint endeavor to improve the effectiveness of the local county public schools at all levels. The content and the styles are various. The book's reception indicates that it meets a public need.

(Always on the alert for good examples of reversals persistent into polysyllables, we are grateful to the dyslexic (?) typesetter who gives us the old primer example of *s* for *a*, as the "auspicious circumstances" of a young man's life become "suspicious" ones, on p. 65!)

Current Concepts in Dyslexia, by Jack Hartstein, ed. St. Louis, Missouri: C. V. Mosby. 1971.

A collection of papers, almost all from St. Louis contributors. The editor's purpose was to explore the field and, recognizing the existence of divergent views, to "expose the reader to the thoughts of various disciplines." The educational methods seem generally comprehensive, rather than specific, and to be oriented toward the concepts of "learning disabilities," more broadly inclusive than the group studied by, for example, Klasen (see p. 204) or in the literature on specific developmental dyslexia.

"Adult Outcomes of Disabled Readers," by Barbara M. Herjanic and Elizabeth C. Penick, in *Journal of Special Education* 6(4):397–410 (Winter 1972).

The authors have searched the field of longitudinal studies of disabled readers followed into late adolescence or adulthood. They found only ten such studies published since 1959, two, from Denmark, one from Canada, and the others from the U.S. Each of these studies is unique, so that there is very little comparability from one to another. The outcomes noted are as variable as the populations studied and the methods of studying them, but more individuals have been able to overcome or compensate for their childhood disabilities than many people predict. The studies of Robinson and Smith and of Rawson showed the most favorable outcomes; others ranged from "satisfactory" to "somewhat handicapped." In general, the attainments were similar to those of the general population, but the reading disability was, nevertheless, a long-term problem. General school remedial reading programs, mounted at great cost, have not been subjected to long-term follow-up, without which it is impossible to determine their effectiveness. Such investigations are badly needed; because of cost and time factors, they are not likely to proliferate!

The textual comment in this article describes the ten studies, and a very useful chart summarizes their nature and their findings.

Preventing Reading Failure, by Jeannette Jansky and Katrina de Hirsch. New York: Harper and Row. 1972.

In this new book, following the authors' *Predicting Reading Failure* (1966), Dr. Jansky describes their more recent research on predictive and

diagnostic experiments and results, while Mrs. de Hirsch writes on the background and rationale for prediction and the philosophy and suggested practice of intervention to prevent failure.

The problem is enormous, but here is a well-informed, well-planned, and well-written piece of work whose impact is sure to be great because it is both sound and practical, within the limits the authors have set.

The other stream of preventive classroom pedagogy which is increasingly demonstrating its effectiveness is not mentioned, even by reference, and critical appraisal of teaching methods is outside the scope of the work. The authors are concentrating on preschool, even nursery, conditions and practices, and on kindergarten tests, with end-of-second-grade assessments used solely as tests of the predictive effectiveness of their assortment of kindergarten instruments. From these latter they have selected the five of highest validity to be combined into a comparatively simple, highly practical Predictive Index, now being used in several further studies.

We are eagerly looking forward to the next stage of this research, in which we hope these authors and their colleagues will observe with equal care and acumen what happens in the early reading instruction of their "high-risk" children who *do* fail as predicted, or, perhaps for cause, *do not* fail. The first step toward prevention is early assessment and identification, but diagnosis without treatment, important as it is to science, needs one more step if it is to be truly preventive of reading failure and all its sequelae.

The Syndrome of Specific Dyslexia, by Edith Klasen. Baltimore: University Park Press. 1972.

This is a careful, thorough, scholarly-scientific presentation of multidisciplinary diagnostic findings, using records of about 500 children seen at Raskob Institute in Oakland, California. The book's explanatory title is, "with special consideration of its physiological, psychological, test psychological and social correlates." Both individual uniqueness and subpatterns within the syndrome are emphasized. The author's evidence supports many of the findings others of us have known from less extensive or more empirical studies. Generally successful treatment is reported, but methods are not described. There is a careful review of the background literature, and the bibliography includes many titles in German and French, as well as in English. The vocabulary is often, but properly, highly technical.

The presentation wisely begins not with an attempt at definition but with the hypothesis: "There exists a syndrome of specific dyslexia which can be shown empirically and statistically and which suggests certain theoretical as well as practical conclusions." The evidence presented supports the hypothesis, but speaking of the partial aspects often investigated in pursuit of the complexities of the problem, the author says, "The more specific the aspect under investigation, the more it is necessary to keep the whole in mind to avoid losing sight of objectivity as well as the complexity and dignity of human nature. Our fast growing knowledge and specialization in the various scientific fields can be of service to the dyslexic only if we maintain a holistic approach. In addition, we need better teamwork and more training for reading therapists."

This is a most important book, particularly for specialists in the field of language learning.

"A Transcultural Study of Dyslexia: Analysis of Language Disabilities of 277 Chinese Children Simultaneously Learning to Read and Write in English and Chinese," by Carl L. Kline and Norma Lee, in *Journal of Special Education* 6(1):9–26 (Spring 1972).

This is the final report of which the preliminary version was published in this *Bulletin,* Volume 19, 1969. The population studied consisted of children of Chinese families in Vancouver, British Columbia. Of the entire group most had no difficulty in either language, some had problems with learning Chinese (where the visual discrimination and memory demands are high), some had trouble with English (with the symptoms with which we are familiar in developmental dyslexia), while a number had problems in both languages. The psychological and test characteristics of each group are considered and some conclusions drawn about what these data contribute to the general understanding of language learning problems. A unique and most interesting contribution to the research annals.

Hey, I Got Sump'n to Tell You, an' It Cool! A Class for Children with Severe Language Disabilities, by Joan L. Monaco, and Elinor L. Zaslow. Rockville, Maryland: Montgomery County Public Schools. 1972.

This Title VI-A project was soundly grounded in theories of linguistics

and the development of language in young children. The Easter Seal treatment facilities and personnel were teamed with the county public schools in the careful assessment of children with extreme delay and distortion of language development, and in the intensive treatment and teaching toward their rehabilitation and eventual success in functioning with other normally intelligent children in school. Full use was made of consultation with experts and of staff consideration of each child's individual needs, as well as of therapeutic contributions by specialists in both facilities. The program is being expanded as rapidly as staff is prepared to handle it in additional schools. There have been many visitors.

A particularly complete "Inventory of Language Processes," prepared by Joan Monaco and Lexa Dillon, is used as a basis for diagnosis. Many specific teaching suggestions are given, including some in beginning reading as used with individual children. It is, however, in the area of early language development that the treatment procedures seem best developed. A detailed case study of Timmy, author of the title, is followed by summaries of nine other children and still briefer information about the children in the second and third classes.

This program, although this is not mentioned, had its beginnings in the nursery and kindergarten groups and the individual testing and therapy which had been carried on for several years at the Easter Seal Center under the inspiration and supervision of the previous director of the Speech and Language program, Mary W. Masland, a truly pioneering program which had laid the groundwork for these recent and current classes. It is always rewarding to see come to fruition a project in which one has had even a small part, as did the reviewer in this case in its early years.

"Language Learning Differences in Plain English," by Margaret B. Rawson, in *Academic Therapy* 7(4):411–419 (Summer 1972). Also available as Orton Society Reprint No. 40.

A statement of the problem by and for a 10-year-old in words almost wholly of Anglo-Saxon derivation, followed by a technical formulation of the same ideas which, by reason of its vocabulary, can be much more condensed.

"Hyperlexia: the Other End of the Continuum," by Norman E. Silberberg and Margaret C. Silberberg, in *Journal of Special Education* 5(3): 233–267 (Fall 1971), Symposium No. 5.

The Silberbergs' paper, proposes that language learning is a trait like any other, and that this is demonstrated by the children who are glib word-calling readers, fluent far beyond their understanding of the material read. The authors propose among other things, that there are many ways to learn about the world besides reading, and that perhaps reading is a relatively unimportant medium for children who have trouble mastering it.

This paper is followed by responses by Katrina de Hirsch, who makes the point that the Silberbergs' "hyperlexics" have a reading problem, too, and show "dyslexia" in one of its forms; Margaret Rawson, who points out that the idea of language difficulty as a "normal physiologic variant" is hardly new (see Orton 1928, *inter alia*), and that one should deal with the problem educationally and not beg the question by saying, "Oh, well, some people just may never read and is that so bad?"; Dorothy Campbell, H. C. Tien, and Anne Cooney and Don McNeil on still other aspects of the problem; and a rebuttal by the lead authors. A symposium in print lends variety and interest to a statement, especially one which has both old-new and controversial ideas to put before its readers.

Instructional Materials

The year 1972–1973 has seen the publication of several very helpful volumes in the practical, pedagogical field. There were about two acres of commercial exhibits at a recent national conference of the International Reading Association, typical of such nationwide gatherings, and confusing to the individual or school which is attempting to make choices for specific purposes. The following reviews do not attempt complete coverage, of course. Much excellent material can be seen among much more that is of marginal or negative value at the exhibits. Those mentioned here have come to the reviewer's attention as being particularly pertinent to the needs of those working with students of varying ages in the language disability field, materials not likely to have wide or commercially persistent advertising, or review notices in many educational publications of a more general character. We should be glad to have other specifically pertinent material called to our attention. The listings are alphabetical, by authors.

A Workbook of Resource Words, by C. Wilson Anderson, Jr., and Harold G. Maine, and *Multisensory Phonics Workbook*, by Harold G. Maine. Minneapolis: T. S. Denison & Co. 1973.

These books, both designed for incorporation into students' notebooks, are the result of the authors' extensive work with secondary school students who have language learning disabilities in public schools. The information is systematically arranged and the practice materials are pertinent. In the first-named book, the type is especially large and clear and the space for student writing ample. The second book contains more explanation. Clear introduction to the teacher and the older student, especially at the end of the first book, should advance grasp and progress.

Angling for Words, by Carolyn C. Bowen. San Rafael, California: Academic Therapy Publications. 2 vols.—Workbook and Studybook for Language Training. 1972.

Developed at the Hockaday School, Dallas, Texas, by a staff trained in the Orton-Gillingham approach, for use by other such therapists. An extremely useful, well-designed compendium of material for the cognitive and skill-practice route to mastery of the English language. Word lists, a rich collection of useful nonce or nonsense words, sentences and other writing examples. Sound and scholarly, with humor and light touches throughout. An indispensible aid in the "multisensory, structured, sequential" teaching of "the language as IT is to the child as HE is."

The Childs Spelling System: The Rules, by Sally B. Childs and Ralph de S. Childs. Cambridge, Massachusetts: Educators Publishing Service. 1973.

A further contribution to the authors' already published and reviewed manuals for the teaching of language to specific language disability students, this presents the structure of English spelling in a concise, well-organized, systematic form, together with useful rules (and a spirit master for their reproduction for student use). The authors point out that "correctness in writing has been made unnecessarily difficult through a lack of attention to basic spelling principles. Correctness, however, is not an end in itself but is necessary to produce the uniformity essential to efficient decoding" of the

message by its recipients. Principles are outlined concisely as a background for rules of their application, organized into a rational body of knowledge.

However, this is not presented with a prescriptive or didactic intent, for that way probably lies failure. The teacher, and especially the student, needs to discover principles and applications for himself, and to work out the word lists, examples, and materials from which he can inductively derive the solutions of his spelling problems. Hence, only enough examples are given to help the therapist or teacher to find his way through what has been the spelling morass at a pace expeditious enough to make him useful to the students he teaches—to enable him to take advantage of the refinements of understanding currently being developed and also (many of them) long available in the Gillingham Manuals.

Some of us used to say that we could teach dyslexic students to read, and perhaps to write legibly, but that spelling was another, and largely hopeless, matter however persistent our efforts. That day has passed now and, with the help of the Childs and the other investigators and teachers in this field, we can probably do an equally, or nearly equally, effective job of helping our students to erpress their ideas in writing in such a way as to minimize the roadblocks to communication which "unconventional" spelling otherwise erects.

The Initial Reading Deck and *The Instant Spelling Deck*, by Aylett R. Cox. Cambridge, Massachusetts: Educators Publishing Service. 1971.

Two very useful sets of cards for practice to the point of automaticity with students who need a scientific approach to reading and spelling. For reading, 98 English symbols are given, with their key words as used in the Gillingham, Childs and Cox and related materials, pictured by Jo Cleaver. Diacritical markings are shown. The student practices instant multimodal responses, thus establishing the raw material for rapid, secure decoding of printed English. For spelling, 44 English speech sounds are given to the teacher, with their commonest initial, medial, and final spellings. These are presented daily to the student to the point of his rapid, automatic response to the auditory stimulus, for use in analysis of words and their systematic encoding. A basic tool for structured spelling, again especially with the Gillingham orientation in its various forms.

Instant PEP for Language, by the Fort Meyer Elementary School Staff, Fort Meyer, Arlington, Virginia. Published by The International Society for General Semantics, San Francisco. 1969.

This adaptation of the structures and practices of General Semantics for children in kindergarten and the first six grades is also keyed into modern linguistics as inspired by the group's consultant, Dr. Neil Postman. Many activities and exercises are simply and explicitly given to help teachers to lead children into clear and sufficiently conscious understanding and use of language as a medium of as effective communication as is humanly possible.

Alphabet Alchemy, by Genevieve Oliphant. Cambridge, Massachusetts: Educators Publishing Service. 1972.

A speech therapist presents simple, systematic procedures for a classroom teacher or a language therapist working with individuals to use in helping children use a multimodal approach to clearing up poor auditory perception and faulty articulation which are the basis of much slow progress in language education or re-education. She presents the short vowels, the single consonants, and the commonest consonant digraphs, in alphabetic rather than phonologic or speech production order. Each letter-sound problem is handled simply and discretely, without reference to the others, so that the inexperienced teacher can be as helpful as possible without special training. A brief outline of theory is given, and Skill Master (like Language Master) cards and a cassette recording of the correct speech sounds are available for pupil and teacher use. An especially helpful set of materials for teachers who have not studied phonics systematically but wish to teach systematically by the multisensory approach. References are given to Slingerland material and to the author's auditory synthesizing and discrimination tests. (Preliminary announcement of this publication appeared in the review section of our *Bulletin* last year.—*Editor*)

Tutor's Sampler, by Lillie Pope, Deborah Edel, and Abraham Haklay. 1973. Brooklyn, N. Y.: Book-Lab, Inc.

As its name implies, this is not a complete manual, but rather a first-aid or supplement for tutors who must deliver services before they have completed, or even barely started, more adequate training. The senior author's

excellent *Guidelines to Teaching Remedial Reading to the Disadvantaged*, and Pollack and Lane's two *Hip Reader* books will provide the user with further information and material for successful use with his pupils—especially those of urban background.

This may be "only a sampler," but its 95 pages present a variety of useful items, from a quick but fairly comprehensive informal inventory of the student's reading status and deficiencies to suggestive exercises, procedures and games, clearly and simply illustrated. An imaginative tutor with initiative will find here many ideas which he can repeat, amplify, or take off from in the difficult business of taking a child or older student from nonreading to at least minimal literacy.

Language Tool Kit, by Paula D. Rome and Jean S. Osman. Cambridge, Massachusetts: Educators Publishing Service. 1972.

The authors supply a guide to teaching both reading and spelling systematically, as they have developed the Orton-Gillingham approach over more than 25 years of individual, group, and teacher education in Rochester, Minnesota. A brief guide makes the procedure as simple and direct as the complications of the subject permit. The "kit" is a set of cards of large enough size for use with groups and with room on each one for summary information on the decoding of symbols and the encoding of sounds for the systematic mastery of language. The information is thus in the hands of the teacher as she works with the card material. The approach is, of course, systematic, structured, cumulative, and multisensory. The Gillingham Manual of 1956 (Red Cover) is preferred for use with this kit. Emphasis in spelling is on the sounds rather than the names of the letters. A helpful aspect of the organization is attention to the order of probabilities in selecting a sound for a letter seen, or a spelling for a sound identified, in a word. Most experienced teachers are familiar with this material, but even they, and novices especially, find having the information useful when it is readily at their fingertips. These authors have also issued drill cards, all black-on-white, for individual use, including packs of prefixes and suffixes.

Help for parents and teachers who are isolated from clinical and other resources is one objective of the authors.

Guidelines to the Education of Nonreaders, by Hy Ruchlis. 1973. Brooklyn, N. Y.: Book-Lab, Inc.

Those who face perhaps the most difficult of all nonreading groups, the inner-city teenagers and the boys and girls in correctional schools and prisons, will find here both hope and help. The author got his start from Drs. Cecelia Pollack and Patrick Lane, with whom he has worked, and whose books are available from the same publisher. Specifically applicable psychological and educational principles are interspersed with very real case-story narratives. A readable and useful volume.

Reference and Miscellany

Recipe for Reading, by Nina Traub. Cambridge, Massachusetts: Educators Publishing Service. 1972.

On the basis of experience in private tutoring and public school teaching, with training in the beginning from Dr. Paul Dozier and Anna Gillingham, the author gives a background orientation into the nature of language learning problems and presents a systematic, sequential set of exercises designed to lead the student through the necessary skills to mastery. This is a multisensory approach which begins with auditory and kinesthetic experiences in writing, in either cursive or manuscript form, the letters the student needs to know in order to read. There is much practice in building real and nonsense words and syllables and in progressing in each lesson through regular steps to sentence writing, reading and the use of books. A sequence chart for each student helps the teacher keep record of his progress. The author has provided a useful guide, with many practical suggestions, for the relatively inexperienced classroom teacher or tutor, as well as an outline which should prove helpful for in-service and more complete, systematic training.

LINCS to Writing, Reading and Spelling, by Roger E. Saunders, Angeline Gialas and Donald B. Hofler. Cambridge, Massachusetts: Educators Publishing Service. 1969, 1972.

Three workbooks which systematically introduce sounds and letters, with multimodal reinforcement, for reading, writing, discriminating, and blending sounds. The interconnectedness of the language forms is emphasized as the

child learns to write cursive script, to read, and to spell. Designed for the beginning stages of teaching dyslexic children. Usefulness has been tested in classroom and individual use. Two additional books are planned, to complete the basic sequence, but children get excellent practice in learning and memory techniques through the use of those here listed.

Yellow Pages of Learning Resources, edited by Richard Saul Wurman. Cambridge, Massachusetts: MIT Press. 1972.

A compendium of fascinating information about the community and its resources, written by several authors and compiled in alphabetical, encyclopedic format. Print is large enough, wording is direct and nongraded, and adult-enough to make this useful with upper elementary, secondary, and adult readers. The editor calls this a "handshake with a city" and its resources—"a welcome mat to the endless possibilities for learning all around you." The range of occupations, business enterprises, and social institutions takes one from *Accountant* and *Airport* through *Money, Museum* and *Newspaper Plant* to *Zoning* and *Zoo.* The authors' ingenious and imaginative as well as systematic and resourceful ways of using this book and its lead-ins to the community suggest a bright future for the book and its approach to highly relevant education outside, as well as within, school walls.

How to Write Scientific and Technical Papers, by Sam F. Trelase. Cambridge, Massachusetts: MIT Press. 1958. Paperback. 1969.

Darwin is quoted as saying, "a naturalist's life would be a happy one if he had only to observe and never to write." But since your reviewer must also edit, and many of you, the readers, must write if the world is to know what has been done and needs to be done to help the children with whom we are concerned, it could help materially if this very practical little book were on every desk. The author has been refining it since 1925, and has provided all you and I need to know in ready reference form.

Registry of Private Schools for Children with Special Educational Needs, prepared and published by National Educational Consultants, Inc., 711 St. Paul St., Baltimore 21202.

A large and potentially useful compendium, especially for those inter-

ested in children with one or several handicapping conditions (speech and hearing, cerebral palsy, minimal brain dysfunction, etc.). There are several references to "Special Learning Disabilities," although the facilities particularly known to us as resources for treatment of children with specific *language* disability are generally not included. Perhaps they will be added in the supplements proposed for this already very large, loose-leaf volume.

The design is good, with listings cross-indexed according to type of difficulty considered, according to state and, within each state, alphabetically by name of school or agency. Many people have tried such listing; few have been successfully inclusive or critical. This is a good beginning which promises to become cumulatively better.

Information Sources in Hearing, Speech and Communication Disorders. Part 2, Organizations, prepared by the staff and consultants of the Information Center for Hearing, Speech, and Disorders of Human Communication, at the Johns Hopkins Medical Institutions, Baltimore 21205, and published by National Educational Consultants, 711 St. Paul St., Baltimore, Maryland 21202.

This is part of the service rendered through the Neurological Information Network of the National Institute of Neurological Diseases and Stroke (NINDS) of the National Institutes of Health (NIH), in an effort to make available the exponentially explosive amount of knowledge recently developed in this field, as in other medical fields. A wealth of information about both private and governmental sectors, making use of modern electronic facilities for the telling.

Learning Disabilities Bibliography, prepared and distributed by New England Special Education Instructional Materials Center, Boston University, 704 Commonwealth Ave., Boston, Massachusetts 02215. Revised Edition, 1972.

This is an 81 page bibliography. There are separate sections listing Texts, Bulletins, Documents and Monographs, Articles, Curriculum Guides, and Materials. The Materials section is further divided with reference to those suitable for special needs: Perceptual Motor, Language, Reading, Spelling and Writing, and Arithmetic. A very useful compendium.

Bibliography on the Nature, Recognition and Treatment of Language Difficulties—the Orton Society's own annotated bibliography—is undergoing extensive revision. The work is being carried forward as expeditiously as possible, and it is hoped that publication can be announced before long.

Also promised by the publisher, W. W. Norton, is a paperback edition of Orton's 1937 *Reading, Writing, and Speech Problems in Children.*

A Statement of Policy

Many people ask what kind of an organization THE ORTON SOCIETY is, where it fits into the pattern of societies and organizations concerned with problems of language and language learning. This summary statement is presented in answer to such inquiries.

The Orton Society, Inc., is a national, non-profit, scientific and educational association committed only to its stated aim: the promotion of the study, treatment and prevention of the problems of specific language difficulty, often called developmental dyslexia, or simply dyslexia. Although the Society, which was founded in 1949, has always been especially interested in understanding the neurological aspects of language disabilities, it considers that it would be violating its purpose and the spirit of the pioneer, Dr. Samuel T. Orton, in whose honor it was named if it should ever become static or adopt a doctrinaire orthodoxy.

As a society its members have joined together because as individuals they have found value and use in an approach to language disabilities which is both broad and specific. This approach is based on the continuously developing knowledge of the nature of language and the needs of its learners. Such an orientation provides a basis for the differential diagnosis of language-learning difficulties of individuals. It also suggests treatment emphasizing the reinforcement of learning through the integrated use of the several sensory channels. Fundamental to such treatment are the systematic presentation and thorough learning of the elements of oral and written language and their synthesis into messages with symbolic meaning. A most important advantage of this approach is its flexibility in meeting the needs of those who have had a common diagnosis of specific dyslexia but present wide individual pattern variations in language development.

The Orton Society does not espouse or prescribe any "official" system or systems of remedial education. Therapists have implemented in different ways the insights of Orton, Bender, de Hirsch, Hermann, Critchley, Thompson, and other diagnosticians and theorists of dyslexia. While the teaching techniques of Gillingham and Stillman and their successors are well known, many others are also employed. A common conceptual approach to the nature of dyslexia and its varied expressions results in similarities in treatment measures; understanding of the comprehensiveness and orderliness needed in each child's language education leads to systematic thoroughness, rather than to a prescribed system.

As a community by reason of interest, with membership open to those who share that interest, The Orton Society does not have judgmental or regulatory functions. Its members are as different as are the individuals whose needs are their common concern. Some members are interested primarily as parents, some as neurologists, pediatricians or psychiatrists, some as psychologists, social workers or educators, some as speech or reading therapists, and so on; others have a more general interest. In any case, members as individuals speak as their convictions lead them to speak, but only by particular appointment do

they act in other groups as representatives of the Society. Membership in The Orton Society does not constitute a professional accreditation nor certify personal qualifications for work in this field. Its importance lies in the sharing of interests and endeavor related to the problems of dyslexia.

In an organized association the efforts of The Orton Society's individual members are strengthened and multiplied in the service of disseminating information about this widespread but little known condition. Recent marked increase in the Society's membership attests growing public awareness of the problem and the need for help in its solution.

In sum, THE ORTON SOCIETY, INC., has a broadly scientific and educational interest in a particular field. Its commitment is non-specific except to its defined function: the promotion of the study, treatment and prevention of the problems of specific language disability, dyslexia. This interest continues to grow and change, as do the scientific disciplines in which it has its bases.

"What's In A Name?"

The name of an association should indicate its philosophy and function, and so nowadays most organizations bear descriptive titles rather than being known by personal names. In the case of the Orton Society, however, such a change has presented more than usual difficulty—a difficulty so far not surmounted.

Just as all current conferences on reading struggle over problems of definition, so has the Orton Society, but it has resolved its problem by retaining the name of the pioneer whose work and attitudes gave rise to its founding. It is, however, in no sense a cult or committed to his or any other beliefs or theories.

To indicate in its name both the breadth and the specificity of the field of interest with which it is concerned, it had three possible choices:

1. When it attempted descriptiveness, it found no single term, nor even brief phrase with acronymic possibility, which was adequate. How could one combine the ideas of the multidisciplinary character of its membership; the interdisciplinary nature of their approach to the subject of common interest; the range of abstraction, from theoretical hypothesis, through laboratory and clinical investigation and diagnostic study, to the varied specifics of treatment; the involvement with human language function, its development and disorders and their remediation; the inclusion of first-language learning, spoken, graphic or formulative reading, writing and spelling, and in any tongue (not only English); and above all the concern with the flexible, yet careful approach to individual problems and the therapeutic relationship with children, students, clients or patients?

2. The society might have insisted on the careful definition and use of some single term. Orton has attempted this unsuccessfully with his part-for-whole coinage, "strephosymbolia." Over the years, from R. Berlin (1887) to, for example, the World Federation of Neurology definitions of 1968 (Bulletin XVIII, p. 22); 81 years later, there have been efforts to use the term "dyslexia." This makes useful shorthand where there is semantic agreement, and the term has been so used in our present statement. Elsewhere, and variously defined, it seems often to sow confusion; witness the many man-hours recently spent on definition by national and international bodies, with no assurance of eventual agreement. Dyslexia, as well as the original "specific language disability," can be no more than explanatory terms in a subtitle, and even there may suggest undesirable limitation of interest and function.

3. The society chose the third alternative. It retained the Orton name as indicative of the range and depth of its involvement, as epitomized by the scientific, humane and practical character of the work of a pioneer. The name would be appropriate even if many of Dr. Orton's prescient hypotheses were not finding increasing understanding and verification at the current growing edges of research. Far from signifying dogma or cult, such a name serves to remind us of the forward look, the enquiring mind, the compassionate spirit and the creative use of scientific discipline in educative treatment.

The Orton Society's policy statement prepared by the officers, directors, and advisors for approval of the membership, will be found to be consistent with the carefully considered reaffirmation of its title.

Facts about The Orton Society

A non-profit educational and scientific organization devoted to the study, prevention and treatment of Specific Language Disability (Dyslexia).

1. It is the only national organization devoted exclusively to helping children with Specific Language Disability (Dyslexia).
2. It was founded in 1949 and named in honor of Dr. Samuel T. Orton, well-known pioneer in this field.
3. It has members in each state of the U.S.A. and in foreign countries.
4. It holds a national conference each fall, and interim Branch meetings.
5. It publishes the annual *Bulletin of The Orton Society*, a professional journal about Specific Language Disability, which is sent free to members, and is available for purchase or subscription.
6. It sends one or more Newsletters annually to members.
7. It issues monographs, an annotated bibliography, and reprints of papers concerning dyslexia and related matters.
8. It offers to members discounts on the society's publications and special rates of admission to many conference events.
9. It has a loan fund to assist teachers in training for work in this field—The Anna Gillingham Fund.
10. It welcomes into its membership educators, doctors, psychologists, parents—everyone interested in helping children with language problems.

Membership in The Orton Society

A non-profit organization, with nationwide and international membership. The Orton Society offers leadership in language programs, research, and publications, all related to dyslexia.

Individual and Student membership categories are available. The membership fee includes membership in local or regional areas where branches have been organized. Branches include British Columbia, northern and southern California, Dallas (Texas), Indiana, Maryland with branches also in Montgomery and Washington counties, New England, New York, Puget Sound, and Upper Midwest. Others are being established in northern and central New Jersey, western Pennsylvania, Richmond (Va.), Oregon and Montana. Address of Branch Chairman will be supplied on request.

All membership fees are processed through the national office, with reimbursement of local branch dues (Individual $2.50—Student $1.25). Where there is as yet no existing local branch, the full membership fee will be retained to cover services from the national office.

I wish to join THE ORTON SOCIETY, INC., and am enclosing my check for one year's membership from the date of application.

Date .....

Mr., Mrs., Miss, Dr. .....

Address .....

..... Zip .....

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Of the following categories, please check the one which best describes your position:

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_____Medicine
_____Parenthood
_____Psychology
_____other (Specify_____)

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( ) The Anna Gillingham Fund ( ) Endowment Fund
( ) General Operating Fund

(The Orton Society is a non-profit organization: therefore all dues and contributions are tax deductible)

Please make check payable to The Orton Society, Inc., and mail to:
THE ORTON SOCIETY, 8415 Bellona Lane, Towson, Maryland 21204

25TH ANNIVERSARY
OF THE ORTON SOCIETY

This milestone occasion will be observed in Rochester, Minnesota, as the "World Congress on Dyslexia" sponsored by the Orton Society in cooperation with the Mayo Clinic.

November 7–10, 1974

THE ORTON SOCIETY

Twenty-Fourth Annual Conference

NOVEMBER 8, 9, 10, AND 11

THE HILTON HOTEL — BALTIMORE, MARYLAND

Theme

Language Development: Individual Variations

THURSDAY—NOVEMBER 8

All-Day Pre-Conference Institutes to meet a wide range of interests for persons dealing with general and specific language learning differences

FRIDAY—NOVEMBER 9

Opening Session

All-day session devoted to explaining SLD to parents

Choice of Topic Sessions

Twenty-Fourth Anniversary Banquet—

SAMUEL T. ORTON AWARD

SATURDAY—NOVEMBER 10

General Sessions

Luncheon

Choice of Topic Sessions by pre-registration

Annual Business Meeting

SUNDAY—NOVEMBER 11

Professionals Exchange Views—Sessions for Speech and Language Therapists; Psychologists and Counselors; Physicians, Neurologists, and Psychiatrists; and School Administrators and Supervisors

The public is cordially invited to all events except the Business Meeting for Members. Many sessions require pre-registration.
Detailed programs will be mailed to members of the Orton Society and to others who write to:

The Orton Society
8415 Bellona Lane
Towson, Maryland 21204.